

# **FY 1999 Scientific and Technical Reports, Articles, Papers, and Presentations**

*Compiled by*

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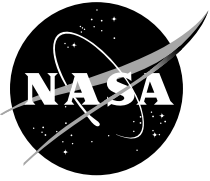
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National Aeronautics and  
Space Administration

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## **FOREWORD**

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Since July 1, 1960, when the George C. Marshall Space Flight Center was organized, the reporting of scientific and engineering information has been considered a prime responsibility of the Center. Our credo has been that "research and development work is valuable, but only if its results can be communicated and made understandable to others."

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GEORGE C. MARSHALL SPACE FLIGHT CENTER  
Marshall Space Flight Center, Alabama

FY 1999 SCIENTIFIC AND TECHNICAL REPORTS  
ARTICLES, PAPERS, AND PRESENTATIONS

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# NASA TECHNICAL MEMORANDUMS

TM—1998–209004                      December 1998  
 High-Strength Aluminum Casting Alloy for High-Temperature Applications (MSFC Center Director's Discretionary Fund Final Report, Project No. 97–10). J.A. Lee.                      19990019483N

A new aluminum-silicon alloy has been successfully developed at Marshall Space Flight Center that has a significant improvement in tensile strength at elevated temperatures (550 to 700 °F). For instance, the new alloy shows an average tensile strength of at least 90 percent higher than the current 390 aluminum piston alloy tested at 500 °F. Compared to conventional aluminum alloys, automotive engines using the new piston alloy will have improved gas mileage, and may produce less air pollution in order to meet the future U.S. automotive legislative requirements for low hydrocarbon emissions. The projected cost for this alloy is <\$0.95/lb, and it readily allows the automotive components to be cast at a high production volume with a low, fully accounted cost. It is economically produced by pouring molten metal directly into conventional permanent steel molds or die casting.

TM—1999–209009                      January 1999  
 A TREETOPS Simulation of the STABLE Microgravity Vibration Isolation System. G.S. Nurre, Y.K. Kim,\* and M.S. Whorton. Structures and Dynamics Laboratory and \*University of Alabama in Huntsville.                      19990021252N

As a research facility for microgravity science, the *International Space Station (ISS)* will be used for numerous experiments which require a quiescent acceleration environment across a broad spectrum of frequencies. For many microgravity science experiments, the ambient acceleration environment on *ISS* will significantly exceed desirable levels. The ubiquity of acceleration disturbance sources and the difficulty in characterization of these sources precludes source isolation, requiring vibration isolation to attenuate the disturbances to an acceptable level at the experiment. To provide a more quiescent acceleration environment, a vibration isolation system named STABLE (Suppression of Transient Accelerations By LEvitation) was developed. STABLE was the first successful flight test of an active isolation device for microgravity science payloads and was flown on STS–73/USML–2 in October 1995. This report documents the development of the high fidelity, nonlinear, multibody simulation developed using TREETOPS which was used to design the control laws and define the expected performance of the STABLE isolation system.

TM—1999–209039                      January 1999  
 Unlined Reusable Filament Wound Composite Cryogenic Tank Testing. A.W. Murphy, R.E. Lake, and C. Wilkerson. Propulsion Laboratory.                      19990019399N

An unlined reusable filament wound composite cryogenic tank was tested at Marshall Space Flight Center using LH<sub>2</sub> cryogen and pressurization to 320 psig. The tank was fabricated by Phillips Laboratory and Wilson Composite Group, Inc., using an EnTec five-axis filament winder and sand mandrels. The material used was 1M7/977–2 (graphic/epoxy).

TM—1999–209091                      February 1999  
 A Photometric Technique for Determining Fluid Concentration Using Consumer-Grade Hardware. F. Leslie and N. Ramachandran.\* Space Sciences Laboratory and \*Universities Space Research Association.                      19990110469N

In support of a separate study to produce an exponential concentration gradient in a magnetic fluid, a noninvasive technique for determining species concentration from off-the-shelf hardware has been developed. The approach uses a backlighted fluid test cell photographed with a commercial digital camcorder. Because the light extinction coefficient is wavelength dependent, tests were conducted to determine the best filter color to use, although some guidance was also provided using an absorption spectrophotometer. With the appropriate filter in place, the attenuation of the light passing through the test cell was captured by the camcorder. The digital image was analyzed for intensity using software from Scion Image Corp. downloaded from the Internet. The analysis provides a two-dimensional array of concentration with an average error of 0.0095 ml/ml. This technique is superior to invasive techniques, which require extraction of a sample that disturbs the concentration distribution in the test cell. Refinements of this technique using a true monochromatic laser light source are also discussed.

TM—1999–209147                      February 1999  
 Measurement of Plastic Stress and Strain for Analytical Method Verification (MSFC Center Director's Discretionary Fund Final Report, Project No. 93–08). J.M. Price, B.E. Steeve, and G.R. Swanson. Structures and Dynamics Laboratory.                      19990032090N

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The analytical prediction of stress, strain, and fatigue life at locations experiencing local plasticity is full of uncertainties. Much of this uncertainty arises from the material models and their use in the numerical techniques used to solve plasticity problems. Experimental measurements of actual plastic strains would allow the validity of these models and solutions to be tested. This memorandum describes how experimental plastic residual strain measurements were used to verify the results of a thermally induced plastic fatigue failure analysis of a Space Shuttle main engine fuel pump component.

TM—1999–209148 February 1999  
NDE Process Development Specification for SRB Composite Nose Cap. M. Suits. Material and Processes Laboratory. 19990028512N

The Shuttle Upgrade program is a continuing improvement process to enable the Space Shuttle to be an effective space transportation vehicle for the next few decades. The Solid Rocket Booster (SRB), as a component of that system, is currently undergoing such an improvement. Advanced materials, such as composites, have given us a chance to improve performance and to reduce weight.

The SRB Composite Nose Cap (CNC) program aims to replace the current aluminum nose cap, which is coated with a Thermal Protection System and poses a possible debris hazard, with a lighter, stronger CNC. For the next 2 years, this program will evaluate the design, material selection, properties, and verification of the CNC. This particular process specification cites the methods and techniques for verifying the integrity of such a nose cap with nondestructive evaluation.

TM—1999–209149 March 1999  
FY 1998 Scientific and Technical Reports, Articles, Papers, and Presentations. J.E. Turner Waits, Compiler. Technical Information & Operations Services Office. 19990088072N

This document presents formal NASA technical reports, papers published in technical journals, and presentations by MSFC personnel in FY98. It also includes papers of MSFC contractors.

After being announced in STAR, all of the NASA series reports may be obtained from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

The information in this report may be of value to the scientific and engineering community in determining

what information has been published and what is available.

TM—1999–209201 March 1999  
A Strategy for Integrating a Large Finite Element Model Using MSC NASTRAN/PATRAN: X-33 Lessons Learned. D.S. McGhee. Structures and Dynamics Laboratory. 19990028385N

The X-33 vehicle is an advanced technology demonstrator sponsored by NASA. For the past 3 years the Structural Dynamics and Loads Branch of NASA's Marshall Space Flight Center has had the task of integrating the X-33 vehicle structural finite element model. In that time, five versions of the integrated vehicle model have been produced and a strategy has evolved that would benefit anyone given the task of integrating structural finite element models that have been generated by various modelers and companies. The strategy that has been presented here consists of six decisions that need to be made: purpose of models, units, common materials list, model numbering, interface control, and archive format. This strategy has been proven and expanded from experience on the X-33 vehicle.

TM—1999–209266 May 1999  
Modified Truncated Cone Target Hyperthermal Atomic Oxygen Test Results. J.A. Vaughn, R.R. Kamenetzky, and M.M. Finckenor. Materials and Processes Laboratory. 19990087364N

The modified truncated cone target is a docking target planned for use on the *International Space Station*. The current design consists of aluminum treated with a black dye anodize, then crosshairs are laser etched for a silvery color. Samples of the treated aluminum were exposed to laboratory simulation of atomic oxygen and ultraviolet radiation to determine if significant degradation might occur. Durability was evaluated based on the contrast ratio between the black and silvery white areas of the target. Degradation of optical properties appeared to level off after an initial period of exposure to atomic oxygen. The sample that was not alodined according to MIL-C-5541, type 1A, performed better than alodined samples.

TM—1999–209425 June 1999  
Space Sciences Laboratory Publications and Presentations, January 1–December 31, 1998. F.G. Summers, Compiler. Space Sciences Laboratory. 19990062144N



## NASA TECHNICAL MEMORANDUMS

This document lists the significant publications and presentations of the Space Sciences Laboratory during the period January 1–December 31, 1998. Entries in the main part of the document are categorized according to NASA Reports (arranged by report number), Open Literature, and Presentations (arranged alphabetically by title). Most of the articles listed under Open Literature have appeared in refereed professional journals, books, monographs, or conference proceedings. Although many published abstracts are eventually expanded into full papers for publication in scientific and technical journals, they are often sufficiently comprehensive to include the significant results of the research reported. Therefore, published abstracts are listed separately in a subsection under Open Literature. Questions or requests for additional information about the entries in this report should be directed to Gregory S. Wilson (ESOL: 544–7579) or to one of the authors. The organizational code of the cognizant SSL branch or office is given at the end of each entry.

TM—1999–209573 August 1999  
*International Space Station* ECLSS Technical Task Agreement Summary Report. C.D. Ray and B.H. Salyer,\* Compilers. Structures and Dynamics Laboratory, and \*Ion Corporation. 19990088077N  
19990116212N

This Technical Memorandum provides a summary of current work accomplished under Technical Task Agreement (TTA) by the Marshall Space Flight Center (MSFC) regarding the *International Space Station* (ISS) Environmental Control and Life Support System (ECLSS). Current activities include ECLSS component design and development, computer model development, subsystem/integrated system testing, life testing, and general test support provided to the ISS program.

Under ECLSS design, MSFC was responsible for the six major ECLSS functions, specifications and standard, component design and development, and was the architectural control agent for the ISS ECLSS. MSFC was responsible for ECLSS analytical model development. In-house subsystem and system level analysis and testing were conducted in support of the design process, including testing air revitalization, water reclamation and management hardware, and certain nonregenerative systems.

The activities described herein were approved in task agreements between MSFC and NASA Headquarters Space Station Program Management Office and their prime contractor for the ISS, Boeing. These MSFC activities are inline to the designing, development,

testing, and flights of ECLSS equipment planned by Boeing. MSFC's unique capabilities for performing integrated systems testing and analyses, and its ability to perform some tasks cheaper and faster to support ISS program needs, are the basis for the TTA activities.

TM—1999–209575 September 1999  
Comparison of Observed Beta Cloth Interactions With Simulated and Actual Space Environment. R.R. Kamenetzky and M.M. Finckenor. Materials Processes and Manufacturing Department.  
19990103958N  
19990103942N

A common component of multilayer insulation blankets is beta cloth, a woven fiberglass cloth impregnated with Teflon™. It is planned for extensive use on the *International Space Station*. The Environmental Effects Group of the Marshall Space Flight Center Materials, Processing, and Manufacturing Department has investigated the impact of atomic oxygen (AO) and ultraviolet (UV) radiation on the optical properties of plain and aluminized beta cloth, both in the laboratory and as part of long-duration flight experiments. These investigations indicate that beta cloth is susceptible to darkening in the presence of UV radiation, dependent on the additives used. AO interactions resulted in bleaching of the beta cloth.

TM—1999–209629 May 1999  
Mars Global Reference Atmospheric Model (Mars-GRAM) Version 3.8: Users Guide. C.G. Justus\* and B.F. James. \*Computer Sciences Corporation and Electromagnetics and Systems Analysis and Integration Laboratory. 19990108484N

Mars Global Reference Atmospheric Model (Mars-GRAM) Version 3.8 is presented and its new features are discussed. Mars-GRAM uses new values of planetary reference ellipsoid radii, gravity term, and rotation rate (consistent with current JPL values) and includes centrifugal effects on gravity. The model now uses NASA Ames Global Circulation Model low resolution topography. Curvature corrections are applied to winds and limits based on speed of sound are applied. Altitude of the F1 ionization peak and density scale height, including effects of change of molecular weight with altitude are computed. A check is performed to disallow temperatures below CO<sub>2</sub> sublimation. This memorandum includes instructions on obtaining Mars-GRAM source code and data files and running the program. Sample input and output are provided. An example of

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incorporating Mars-GRAM as an atmospheric subroutine in a trajectory code is also given.

TM—1999–209630 May 1999  
The NASA/MSFC Global Reference Atmospheric Model—1999 Version (GRAM-99). C.G. Justus\* and D.L. Johnson. \*Computer Sciences Corporation and Engineering Systems Department.  
19990107329N

The latest version of Global Reference Atmospheric Model (GRAM-99) is presented and discussed. GRAM-99 uses either (binary) Global Upper Air Climatic Atlas (GUACA) or (ASCII) Global Gridded Upper Air Statistics (GGUAS) CD-ROM data sets, for 0–27 km altitudes. As with earlier versions, GRAM-99 provides complete geographical and altitude coverage for each month of the year. GRAM-99 uses a specially-developed data set, based on Middle Atmosphere Program (MAP) data, for 20–120 km altitudes, and NASA's 1999 version Marshall Engineering Thermosphere (MET-99) model for heights above 90 km. Fairing techniques assure smooth transition in overlap height ranges (20–27 km and 90–120 km). GRAM-99 includes water vapor and 11 other atmospheric constituents ( $O_3$ ,  $N_2O$ ,  $CO$ ,  $CH_4$ ,  $CO_2$ ,  $N_2$ ,  $O_2$ ,  $O$ ,  $A$ ,  $He$ , and  $H$ ). A variable-scale perturbation model provides both large-scale (wave) and small-scale (stochastic) deviations from mean values for thermodynamic variables and horizontal and vertical wind components. The small-scale perturbation model includes improvements in representing intermittency ("patchiness"). A major new feature is an option to substitute Range Reference Atmospheric (RRA) data for conventional GRAM climatology when a trajectory passes sufficiently near any RRA site. A complete user's guide for running the program, plus sample input and output, is provided. An example is provided for how to incorporate GRAM-99 as subroutines in other programs (e.g., trajectory codes).

TM—1999–209631 September 1999  
Deflections of a Uniformly Loaded Circular Plate With Multiple Support Points. L.D. Craig and J.A.M. Boulet\*. Structures, Mechanics, and Thermal Department and \*University of Tennessee.  
19990107327N

This technical memorandum describes a method for determining the transverse deflections of a uniformly loaded, thin circular plate of constant thickness supported by single or multiple rings of equally spaced discrete

points. The rotations are assumed free at each point. This could have application in the design of telescope mirror supports that must minimize structural gravitational deformations. It could also be of general use to the structural analyst.

TM—1999–209734 May 1999  
Lightning Protection Guidelines for Aerospace Vehicles. C.C. Goodloe. System Analysis and Integration Laboratory.

This technical memorandum provides lightning protection engineering guidelines and technical procedures used by the George C. Marshall Space Flight Center (MSFC) Electromagnetics and Aerospace Environments Branch for aerospace vehicles. The overviews illustrate the technical support available to project managers, chief engineers, and design engineers to ensure that aerospace vehicles managed by MSFC are adequately protected from direct and indirect effects of lightning. Generic descriptions of the lightning environment and vehicle protection technical processes are presented. More specific aerospace vehicle requirements for lightning protection design, performance, and interface characteristics are available upon request to the MSFC Electromagnetics and Aerospace Environments Branch, mail code EL23.

TM-1999-209735 September 1999  
Static Strength Characteristics of Mechanically Fastened Composite Joints (MSFC Center Director's Discretionary Fund Final Report, Project No. 95–07). D.E. Fox and K.W. Swaim. Structures, Mechanics, and Thermal Department.  
19990111740N

The analysis of mechanically fastened composite joints presents a great challenge to structural analysts because of the large number of parameters that influence strength. These parameters include edge distance, width, bolt diameter, laminate thickness, ply orientation, and bolt torque. The research presented in this report investigates the influence of some of these parameters through testing and analysis. A methodology is presented for estimating the strength of the bolthole based on classical lamination theory using the Tsai-Hill failure criteria and typical bolthole bearing analytical methods.

TP—1998–209003                      December 1998  
 Deciphering the Long-Term Trend of Atlantic Basin  
 Intense Hurricanes: More Active Versus Less Active  
 During the Present Epoch. Robert M. Wilson. Space  
 Sciences Laboratory.                      19990021448N

During the interval of 1944–1997, 120 intense hurricanes (i.e., those of category 3 or higher on the Saffir-Simpson hurricane damage potential scale) were observed in the Atlantic basin, having an annual frequency of 0–7 events per year, being more active prior to the mid 1960's than thereafter (hence a possible two-state division: more active versus less active), and being preferentially lower during El Niño years as compared to non-El Niño years. Because decadal averages of the frequency of intense hurricanes closely resemble those of average temperature anomalies for northern hemispheric and global standards and of the average temperature at the Armagh Observatory (Northern Ireland), a proxy for climatic change, it is inferred that the long-term trends of the annual frequency of intense hurricanes and temperature may be statistically related. Indeed, on the basis of 4- and 10-yr moving averages, one finds that there exists strong linear associations between the annual frequency of intense hurricanes in the Atlantic basin and temperature (especially, when temperature slightly leads). Because the long-term leading trends of temperature are now decidedly upward, beginning about mid 1980's, it is inferred that the long-term consequential trends of the annual frequency of intense hurricanes should now also be upward, having begun near 1990, suggesting that a return to the more active state probably has already occurred. However, because of the anomalous El Niño activity of the early to mid 1990's, the switch from the less active to the more active state essentially went unnoticed (a marked increase in the number of intense hurricanes was not observed until the 1995 and 1996 hurricane seasons, following the end of the anomalous El Niño activity.) Presuming that a return to the more active state has, indeed, occurred, one expects the number of seasonal intense hurricanes during the present epoch (continuing through about 2012) to usually be higher than average (i.e.,  $\geq 2$ ), except during El Niño-related seasons when the number usually will be less than average.

TP—1998–209005                      December 1998  
 Statistical Aspects of ENSO Events (1950–1997) and  
 the El Niño-Atlantic Intense Hurricane Activity  
 Relationship. Robert M. Wilson. Space Sciences  
 Laboratory.                      19990018028N

On the basis of Kevin Trenberth's quantitative definition for marking the occurrence of an El Niño (or La Niña), one can precisely identify by month and year the starts and ends of some 15 El Niño and 10 La Niña events during the interval of 1950–1997, an interval corresponding to the most reliable for cataloguing intense hurricane activity in the Atlantic basin (i.e., those of category 3–5 on the Saffir-Simpson hurricane scale). The main purpose of this investigation is primarily two-fold: First, the statistical aspects of these identified extremes and the intervening periods between them (called "interludes") are examined and, second, the statistics of the seasonal frequency of intense hurricanes in comparison to the extremes and interludes are determined.

This study clearly demonstrates that of the last 48 hurricane seasons, 20 (42 percent) can be described as being "El Niño-related" (i.e., an El Niño was in progress during all, or part, of the year hurricane season—June–November), 13 (27 percent) as "La Niña-related" (i.e., a La Niña was in progress during all, or part, of the yearly hurricane season), and 15 (31 percent) as "interlude-related" (i.e., neither an El Niño nor a La Niña was in progress during any portion of the yearly hurricane season.) Combining the latter two subgroups into a single grouping called "non-El Niño-related" seasons, one finds that they have had a mean frequency of intense hurricanes measuring 2.8 events per season, while the El Niño-related seasons have had a mean frequency of intense hurricanes measuring 1.3 events per season, where the observed difference in the means is inferred to be statistically important at the 99.8-percent level of confidence. Therefore, as previously shown by William Gray and colleagues more than a decade ago using a different data set, there undeniably exists an El Niño-Atlantic hurricane activity relationship, one which also extends to the class of intense hurricanes. During the interval of 1950–1997, fewer intense hurricanes occurred during El Niño-related seasons (always  $\leq 3$  and usually  $\leq 2$ , this latter value having been true for 18 of the 20 El Niño-related seasons), while more usually occurred during non-El Niño-related seasons (typically  $\geq 2$ , having been true for 22 of the 28 non-El Niño-related seasons). Implications for the 1998 and 1999 hurricane seasons are discussed.

TP—1999–209038                      January 1999  
 Quasi-Static Probabilistic Structural Analyses  
 Process and Criteria. B. Goldberg and V. Verderame.  
 Structures and Dynamics Laboratory.                      19990025665N

Current deterministic structural methods are easily applied to substructures and components, and analysts have built great design insights and confidence in them over the years. However, deterministic methods cannot support systems risk analyses, and it was recently reported that deterministic treatment of statistical data is inconsistent with error propagation laws that can result in unevenly conservative structural predictions. Assuming normal distributions and using statistical data formats throughout prevailing stress deterministic processes lead to a safety factor in statistical format, which integrated into the safety index, provides a safety factor and first order reliability relationship. The embedded safety factor in the safety index expression allows a historically based risk to be determined and verified over a variety of quasi-static metallic substructures consistent with the traditional safety factor methods and NASA Std. 5001 criteria.

TP—1999–209260 June 1999  
Material Selection Guidelines to Limit Atomic Oxygen Effects on Spacecraft Surfaces. D. Dooling\* and M.M. Finckenor. \*D<sup>2</sup> Associates and Space Environments and Effects (SEE) Program.  
19990064119N

*Material Selection Guidelines to Limit Atomic Oxygen Effects on Spacecraft Surfaces* provides guidelines in selecting materials for satellites and space platforms, designed to operate within the Low-Earth orbit environment, which limit the effects of atomic oxygen interactions with spacecraft surfaces.

This document should be treated as an introduction rather than a comprehensive guide since analytical and flight technologies continue to evolve, flight experiments are conducted as primary or piggyback opportunities arise, and our understanding of materials interactions and protection methods grows. The reader is urged to consult recent literature and current web sites containing information about research and flight results.

TP—1999–209263 April 1999  
Multilayer Insulation Material Guidelines. M.M. Finckenor and D. Dooling.\* Space Environments and Effects (SEE) Program and \*D<sup>2</sup> Associates.  
19990047691N

*Multilayer Insulation Material Guidelines* provides data on multilayer insulation materials used by previous spacecraft such as Spacelab and the Long-Duration Exposure Facility and outlines other concerns. The data presented in the document are presented for information only. They can be used as guidelines for multilayer

insulation design for future spacecraft provided the thermal requirements of each new design and the environmental effects on these materials are taken into account.

TP—1999–209264 June 1999  
Contamination Effects on EUV Optics. J. Tveekrem. Goddard Space Flight Center. Space Environments and Effects (SEE) Program. 19990064368N

During ground-based assembly and upon exposure to the space environment, optical surfaces accumulate both particles and molecular condensables, inevitably resulting in degradation of optical instrument performance.

Currently, this performance degradation (and the resulting end-of-life instrument performance) cannot be predicted with sufficient accuracy using existing software tools. Optical design codes exist to calculate instrument performance, but these codes generally assume uncontaminated optical surfaces. Contamination models exist which predict approximate end-of-life contamination levels, but the optical effects of these contamination levels can not be quantified without detailed information about the optical constants and scattering properties of the contaminant. The problem is particularly pronounced in the extreme ultraviolet (EUV, 300–1,200 Å) and far (FUV, 1,200–2,000 Å) regimes due to a lack of data and a lack of knowledge of the detailed physical and chemical processes involved. Yet it is in precisely these wavelength regimes that accurate predictions are most important, because EUV/FUV instruments are extremely sensitive to contamination.

TP—1999–209267 May 1999  
Design and Test of Low-Profile Composite Aerospace Tank Dome (MSFC Center Director's Discretionary Fund Final Report, Project No. 96–28). R. Ahmed. Structures and Dynamics Laboratory.  
19990046771N

This report summarizes the design, analysis, manufacture, and test of a subscale, low-profile composite aerospace dome under internal pressure. A low-profile dome has a radius-to-height ratio greater than the square root of two. This effort demonstrated that a low-profile composite dome with a radius-to-height ratio of three was a feasible design and could adequately withstand the varying stress states resulting from internal pressurization. Test data for strain and displacement versus pressure are provided to validate the design.



TP—1999–209373

July 1999

Spacecraft Environments Interactions: Space Radiation and Its Effects on Electronic Systems. J.W. Howard, Jr.\* and D.M. Hardage. \*Computer Sciences Corporation and Systems Analysis and Integration Laboratory. 19990100675N

The natural space environment is characterized by complex and subtle phenomena hostile to spacecraft. Effects of these phenomena impact spacecraft design, development, and operation. Space systems become increasingly susceptible to the space environment as use of composite materials and smaller, faster electronics increases. This trend makes an understanding of space radiation and its effects on electronic systems essential to accomplish overall mission objectives, especially in the current climate of smaller/better/cheaper faster.

This primer outlines the radiation environments encountered in space, discusses regions and types of radiation, applies the information to effects that these environments have on electronic systems, addresses design guidelines and system reliability, and stresses the importance of early involvement of radiation specialists in mission planning, system design, and design review (part-by-part verification).

TP—1999–209576

September 1999

The Geophysical Fluid Flow Cell Experiment. J.E. Hart,\* D. Ohlsen,\* S. Kittelman,\* N. Borhani,\* F. Leslie, and T. Miller. \*University of Colorado and Microgravity Sciences and Applications Department. 19990111738N

The Geophysical Fluid Flow Cell (GFFC) experiment performed visualizations of thermal convection in a rotating differentially heated spherical shell of fluid. In these experiments dielectric polarization forces are used to generate a radially directed buoyancy force. This enables the laboratory simulation of a number of geophysically and astrophysically important situations in which sphericity and rotation both impose strong constraints on global scale fluid motions. During USML–2 a large set of experiments with spherically symmetric heating were carried out. These enabled the determination of critical points for the transition to various forms of nonaxisymmetric convection, and, for highly turbulent flows, the transition latitudes separating the different modes of motion. This paper presents a first analysis of these experiments as well as data on the general performance of the instrument during the USML–2 flight.

# NASA CONFERENCE PUBLICATIONS

CP—1998–207891 November 1998  
Third United States Microgravity Payload: One Year Report. P.A. Curreri, D. McCauley,\* and C. Walker,\*\* Compilers. \*University of Alabama in Huntsville and \*\*Universities Space Research Association. 19990020826N

This document reports the one year science results for the Third United States Microgravity Payload (USMP-3). The USMP-3 major experiments were on a support structure in the Space Shuttle's payload bay and operated almost completely by the Principal Investigators through telescience. The mission included a Glovebox where the crew performed additional experiments for the investigators. Together about seven major scientific experiments were performed, advancing the state of knowledge in fields such as low temperature physics, solidification, and combustion. The results demonstrate the range of quality science that can be conducted utilizing orbital laboratories in microgravity and provide a look forward to a highly productive space station era.

CP—1998–208868 November 1998  
Microgravity Science Laboratory (MSL-1) Final Report. M.B. Robinson, Compiler. 19990019800N

This document reports the results and analyses presented at the Microgravity Science Laboratory (MSL-1) One Year Science Review meeting held at Marshall Space Flight Center August 25–26, 1998. The MSL-1 payload first flew on the *Space Shuttle Columbia* (STS-83) April 4–8, 1997. Due to a fuel cell problem, the mission was cut short, and the payload flew again on *Columbia* (STS-94) July 1–17, 1997. The MSL-1 investigations were performed in a pressurized Spacelab module and the Shuttle middeck. Twenty-nine experiments were performed and represented disciplines such as fluid physics, combustion, materials science, biotechnology, and plant growth. Four accelerometers were used to record and characterize the microgravity environment. The results demonstrate the range of quality science that can be conducted utilizing orbital laboratories in microgravity.

CP—1998–209006 December 1998  
New Space Industries for the Next Millennium. D.V. Smitherman, Jr., Compiler. Program Development Directorate. 19990021561N

New Space Industries for the Next Millennium is a final report of the findings from the New Space Industries

Workshop held in Washington, DC, in February 1998. The primary purpose of this workshop was to identify what must be done to develop new markets, and to generate plans, milestones, and new organizational relationships designed to facilitate the goal of space development. This document provides a summary report on the results of that workshop and is not intended as a statement of NASA or government policy.

Previous studies had shown great potential for the development of new markets in space (e.g., travel and entertainment, space solar power, satellite and space transfer services, research and development in space, space manufacturing, and space resources), and a great need for coordination and formation of infrastructures (e.g., space transportation, space business parks, and space utilities), to facilitate the growth of new space businesses. The New Space Industries Workshop brought together government, academia, and industry participants from several previous studies and other professionals interested in the development of space for commercial purposes. Their participation provided input into the role of government and industry in space development as well as the technology needs that will enable space development.

The opening of the frontier of space, not just to government missions but to private individuals and commercial business, is a challenge of overarching importance. It is our hope that the workshop and this final report continue in earnest the process of identifying and overcoming the barriers to large-scale public access and development of space in the early years of the next century.

CP—1999–209092 February 1999  
NASA Microgravity Materials Science Conference. D.C. Gillies and D.E. McCauley,\* Compilers. \*University of Alabama in Huntsville. 19990040241N

The Microgravity Materials Science Conference was held July 14–16, 1998 at the Von Braun Center in Huntsville, AL. It was organized by the Microgravity Materials Science Discipline Working Group, sponsored by the Microgravity Research Division at NASA Headquarters, and hosted by the NASA Marshall Space Flight Center and the Alliance for Microgravity Materials Science and Applications. It was the third NASA conference of this type in the microgravity materials science discipline. The microgravity science program sponsored approximately 125 investigations and 100 principal investigators in FY98, almost all of whom made oral or poster presentations at this conference. The

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conference's purpose was to inform the materials science community of research opportunities in reduced gravity in preparation for a NASA Research Announcement scheduled for release in late 1998 by the Microgravity Research Division at NASA Headquarters. The conference was aimed at materials science researchers from academia, industry, and government. A tour of the Marshall Space Flight Center microgravity research facilities was held on July 16, 1998. This volume is comprised of the research reports submitted by the principal investigators after the conference.

CP—1999–209144 February 1999  
The 1998 NASA Aerospace Battery Workshop. J.C. Brewer, Compiler. 19990032324N

This document contains the proceedings of the 31st annual NASA Aerospace Battery Workshop, hosted by the Marshall Space Flight Center on October 27–29, 1998. The workshop was attended by scientists and engineers from various agencies of the U.S. Government, aerospace contractors, and battery manufacturers, as well as international participation in like kind from a number of countries around the world.

The subjects covered included nickel-hydrogen, silver-hydrogen, nickel-metal hydride, and lithium-based technologies, as well as results from destructive physical analyses on various cell chemistries.

CP—1999–209146/VOL. 2 February 1999  
General Public Space Travel and Tourism—Volume 2 Workshop Proceedings. D. O'Neil, Compiler, I. Bekey,\* J. Mankins,\* W. Piland,\*\* T. Rogers,\*\*\* and E. Stallmer,\*\*\* Editors. \*NASA Headquarters, \*\*Langley Research Center, and \*\*\*Space Transportation Association. 19990041888N

The Space Transportation Association and NASA conducted a General Public Space Travel study between 1996 and 1998. During the study, a workshop was held at Georgetown University. Participants included representatives from the travel, aerospace, and construction industries. This report is the proceedings from that workshop. Sections include infrastructure needs, travel packages, policy related issues, and potential near-term activities.

CP—1999–209258 April 1999  
Third Aerospace Environmental Technology Conference. A.F. Whitaker, D.R. Cross, S.V. Caruso, M. Clark-Ingram, Editors. Materials and Processes Laboratory. 19990075847N

The elimination of CFC's, Halons, TCA, other ozone depleting chemicals, and specific hazardous materials is well underway. The phaseout of these chemicals has mandated changes and new developments in aerospace materials and processes. We are beyond discovery and initiation of these new developments and are now in the implementation phase. This conference provided a forum for materials and processes engineers, scientists, and managers to describe, review, and critically assess the evolving replacement and clean propulsion technologies from the standpoint of their significance, application, impact on aerospace systems, and utilization by the research and development community. The use of these new technologies, their selection and qualification, their implementation, and the needs and plans for further developments were presented.

CP—1999–209261 June 1999  
11th International Conference on Atmospheric Electricity. H.J. Christian, Compiler. Global Hydrology Research Office. 19990108601N

This document contains the proceedings from the 11th International Conference on Atmospheric Electricity (ICAE 99), held June 7–11, 1999. This conference was attended by scientists and researchers from around the world.

The subjects covered included natural and artificially initiated lightning, lightning in the middle and upper atmosphere (sprites and jets), lightning protection and safety, lightning detection techniques (ground, airborne, and space-based), storm physics, electric fields near and within thunderstorms, storm electrification, atmospheric ions and chemistry, shumann resonances, satellite observations of lightning, global electrical processes, fair weather electricity, and instrumentation.

CP—1999–209628 September 1999  
Fourth United States Microgravity Payload: One Year Report. E.C. Ethridge, P.A. Curreri, and D.E. McCauley,\* Compilers. \*University of Alabama in Huntsville.

This document reports the one year science results for the Fourth United States Microgravity Payload (USMP-4). The USMP-4 major experiments were on a support structure in the Space Shuttle's payload bay and operated almost completely by the Principal Investigators through telepresence. The mission included a Glovebox where the crew performed additional experiments for the investigators. Together about eight major scientific experiments were performed, advancing the state of

knowledge in fields such as low temperature physics, solidification, and combustion. The results demonstrate the range of quality science that can be conducted utilizing orbital laboratories in microgravity and provide a look forward to a highly productive Space Station era.



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CR—1999–208188	October 1998	CR—1999–209426	July 1999
FNAS/LDEF Radiation Data Analysis—Final Report. NAS8–38609, D.O. #115. University of Alabama in Huntsville.		A Comparison of Single-Cycle Versus Multiple-Cycle Proof Testing Strategies. NAS8–37451. Southwest Research Institute.	
	19990040178N		19990064433N
CR—1999–208189	February 1998	CR—1999–209427	July 1999
Study Methods to Standardize Thermography NDE—Final Report. NAS8–38609, D.O. #174. University of Alabama in Huntsville.		Guidelines for Proof Test Analysis. NAS8–39380. Southwest Research Institute.	
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CR—1999–208190	August 1998	CR—1999–209428	July 1999
Injector Mixing Efficiency Experiments—Final Report. NAS8–38609, D.O. #159. University of Alabama in Huntsville.		Development of a Practical Methodology for Elastic-Plastic and Fully Plastic Fatigue Crack Growth. NAS8–37828. Southwest Research Institute.	
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Experimental Internet Environment Software Development—Final Report for Period June 14, 1996 through March 31, 1998. NAS8–38609, D.O. #169. University of Alabama in Huntsville.		Characterizing Secondary Debris Impact Ejecta. University of Alabama in Huntsville.	
	19990042214N		19990116211N
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Structural Stiffness Characteristics of the Solid Rocket Booster Field Joint—Final Report. NAS8–39131, D.O. #29. Auburn University.		Humidity Effects on Soluble Core Mechanical and Thermal Properties (Polyvinyl Alcohol/Microballoon Composite—Final Report Volume 1). NAS8–37800. Aerojet ASRM Division.	
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CR—1998–208859	October 1998	CR—1999–209563	December 1993
A Compendium of Wind Statistics and Models for the NASA Space Shuttle and Other Aerospace Vehicle Programs. NAS8–60000. Computer Sciences Corporation.		Space-Based Doppler Lidar Sampling Strategies—Algorithm Development and Simulated Observation Experiments—Final Report (June 27, 1990 to December 1, 1993). NAS8–38559. Simpson Weather Associations, Inc.	
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CR—1999–209008	January 1999	CR—1999–209565	April 1996
Thermal Control Surfaces Experiment. NAS8–38939. AZ Technology, Inc.		Performance Evaluation Gravity Probe B Design—Final Report (September 25, 1995–April 5, 1996). NAS8–40618. Control Dynamics.	
	19990021250N		19990071658N
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A Survey of Radiation Measurements Made Aboard Russian Spacecraft in Low-Earth Orbit. NAS8–40294. Eril Research, Inc.		Shuttle Mission STS–50: Orbital Processing of High-Quality CdTe Compound Semiconductors Experiment—Final Flight Sample Characterization Report. NAS8–38147. Northrop Grumman Corporation.	
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CR—1999–209568                      December 1998  
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Development—Final Report (December 1, 1997–  
November 30, 1998). NAS8–40431. Science  
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19990092480N

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DAS Sustaining Engineering—Final Report. NAS8–  
39879. Teledyne Brown Engineering.  
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CR–1999—209574                      September 1999  
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ABDELDAYEM, H.A.	USRA	ALEXANDER, R.A.	TD31
PALEY, M.S.	USRA	STANLEY, T.T.	International Space Systems, Inc.
FRAZIER, D.O.	SD40		A Collaborative Analysis Tool for Thermal Protection Systems for Single Stage to Orbit Launch Vehicles. For presentation at Thermal and Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.
ADAMS, M.L.	ES82	ALHORN, D.C.	EB23
	Solar Flares and Their Prediction. For presentation at Colloquium at the University of Memphis, Memphis, TN, January 27, 1999.		Utilizing Advanced Vibration Isolation Technology to Enable Microgravity Science Operations. For presentation at 36th Space Congress, Cape Canaveral, FL, April 27–30, 1999.
ADAMS, M.L.	ES82	ANDERSON, B.J.	EL23
BERO, E.			Meteoroids and Meteor Storms: A Threat to Spacecraft? For presentation at Scientific-Atlanta, Inc., "VISTA" Users Conference, Atlanta, GA, April 18–21, 1999.
SEVER, T.L.	ES82		
	The Sun in Time. For presentation at Southeastern Planetarium Association Annual Conference, Jacksonville, FL, June 25, 1999.		
ADAMS, M.L.	ES82	ANDERSON, R.R.	University of Iowa
HAGYARD, M.J.	ES82	GURNETT, D.A.	University of Iowa
NEWTON, E.K.	ES82	FRANK, L.A.	University of Iowa
	Education and Public Outreach for MSFC's Ground-Based Observations in Support of the HESSI Mission. For presentation at AAS Meeting, Chicago, IL, June 2, 1999.	SIGWARTH, J.B.	University of Iowa
		MATSUMOTO, H.	Kyoto University, Japan
		HASHIMOTO, K.	Kyoto University, Japan
		KOJIMA, H.	Kyoto University, Japan
		MURATA, T.	Ehime University, Japan
AGGARWAL, M.D.	Alabama A&M University	SPANN, J.F., JR.	ES83
CHOI, J.	Alabama A&M University	ET AL.	
WANG, W.S.	Alabama A&M University		GEOTAIL and POLAR Observations of Auroral Kilometric Radiation and Terrestrial Low Frequency Bursts and Their Relationship to Energetic Particles, Auroras, and Other Substorm Phenomena. For presentation at 1999 Spring AGU Meeting, Boston, MA, May 31–June 4, 1999.
BHAT, K.	Alabama A&M University		
LAI, R.B.	Alabama A&M University	ANTAR, B.N.	University of Tennessee
SHIELDS, A.D.	ES76	ETHRIDGE, E.	SD47
PENN, B.G.	ES76	MAXWELL, D.	SD47
FRAZIER, D.O.	ES76		Viscosity Measurement Using Drop Coalescence in Microgravity. For presentation at Annual Microgravity Science & Space Symposium, Reno, NV, January 13, 2000.
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ALEXANDER, C.	ES84	ASCHWANDEN, M.J.	Lockheed-Martin
SWIFT, W.	UAH	ALEXANDER, D.	Lockheed-Martin
GHOSH, K.K.	NRC/ES84	HURLBURT, N.	Lockheed-Martin
RAMSEY, B.D.	ES84	NEWMARK, J.S.	Space Applications
	Design of a Day/Night Star Camera System. For presentation at International Symposium on Optical Sciences, Engineering, Denver, CO, July 18–23, 1999.	NEUPERT, W.M.	Hughes SXT Corp.
		KLIMCHUK, J.A.	Naval Research Lab
ALEXANDER, R.A.	PD21	GARY, G.A.	ES82
COLEMAN, H.W.	UAH		3D-Stereoscopic Analysis of Solar Active Region Loops: II. SoHo/EIT Observations at Temperatures of
	Thermal Characterization of a Direct Gain Solar Thermal Engine. For presentation at Renewable and Advanced Energy Systems for the 21st Century Conference, Maui, Hawaii, April 11–15, 1999.		

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TSE, C.L.  
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- AUSTIN, R.A. ES82  
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A High-Pressure Gas-Scintillation-Proportional Counter for the Focus of a Hard-X-Ray Telescope. For publication in Proceedings of SPIE International Symposium on Optical Science, Denver, CO, July 18–23, 1999.
- AUSTIN, R.A. ES84  
X-Ray Astronomy Research at the Marshall Space Flight Center. For presentation at Kazan State University, Kazan Russian Federation, March 12, 1999.
- AUSTIN, R.E. RA20  
RISING, J.J. Lockheed-Martin  
X–33, Leading the Way to VentureStar™ in the Next Millenium. For presentation at 50th International Astronautical Congress by IAF, Amsterdam, The Netherlands, October 2–9, 1999.
- BACHMANN, K.J. North Carolina State  
CARDELINO, B.H. Spelman College  
MOORE, C.E. SD47  
CARDELINO, C.A. Georgia Institute of Technology  
SUKIDI, N. North Carolina State  
MCCALL, S. North Carolina State  
Modeling and Real-Time Process Monitoring of Organometallic Chemical Vapor Deposition of III-V Phosphides and Nitrides at Low and High Pressures. For publication in Proceedings of Materials Research Society, San Francisco, CA, April 5–9, 1999.
- BAILEY, J.C. Raytheon STX  
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- BALEPIN, V. MSE Technology  
PRICE, J. EP62  
FILIPENCO, V. United Technologies  
RL10-Based Combined Cycle for a Small Reusable Single-Stage-to-Orbit Launcher. For presentation at 14th International Symposium on Airbreathing Engines, Florence, Italy, September 5–10, 1999.
- BANKS, C.E. ES75  
ZHU, S. USRA  
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HICKE, R.  
SARKISOV, S. Alabama A&M University  
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- BANKSTON, C.D. ES84  
CARLSTROM, J.E. University of Chicago  
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- BARRET, C. EP63  
The Lifting Body Legacy...X–33. For presentation at AIAA 37th Aerospace Sciences Conference, Reno, NV, January 11–14, 1999.
- BARRET, C. EP63  
Reaching for the Stars. For presentation at 1999 Society of Women Engineers Conference, Phoenix, AZ, June 22–26, 1999.
- BARRET, C. TD40  
Aerobots and Hydrobots for Planetary Exploration. For presentation at 38th AIAA Aerospace Sciences Conference, Reno, NV, January 10–13, 2000.
- BASKARAN, S. Raytheon ITSS  
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BLAKESLEE, R.J.	HR20	D'AGOSTINO, M.G.	TD63
BAILEY, J.C.	Pace and Waite	ENGEL, B.A.	Qualis Corp.
STEWART, M.F.	UAH/HR20	ENGEL, C.D.	Qualis Corp.
BLAIR, A.K.	UAH/HR20	Short Duration Base Heating Test Improvements. For presentation at Test & Evaluation and Science & Technology Conference, Tullahoma, TN, October 12–15, 1999.	
High-Altitude Aircraft-Based Electric-Field Measurements Above Thunderstorms. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.			
BAUGHER, C.	SD46	BEST, S.R.	ES01
BENNETT, N.	USRA/SD48	ROSE, M.F.	ES01
COCKRELL, D.	SD46	A Plasma Drag Hypervelocity Particle Accelerator (HYPER). For presentation at 1998 Hypervelocity Impact Symposium, Huntsville, AL, November 11, 1998.	
JEX, F.	SD46		
MUSICK, B.	SD46		
POE, J.	SD46		
ROARK, W.	Mevatec/SD46	BICKLEY, F.P.	EE61
Microgravity Science in Space Flight Gloveboxes. For presentation at STAIF–2000, Albuquerque, NM, January 30–February 3, 2000.		SCHWINGHAMER, R.J.	DA01
		NASA Experience with the Shuttle External Tank. For presentation at National Manufacturing Week Conference, Chicago, IL, March 15–18, 1999.	
BELLOMY-EZELL, J.	Sverdrup		
FARMER, J.	ED25	BLAKESLEE, R.	SD60
BREEDING, S.	Tec Masters, Inc.	The Rondonia Lightning Detection Network: Network Description, Science Objectives, Data Processing/Archival Methodology, and First Results. For presentation at 6th International Congress of the Brazilian Geophysical Society, Rio de Janeiro, Brazil, August 15–19, 1999.	
SPIVEY, R.	Tec Masters, Inc.		
Characterization of the Heat Extraction Capability of a Compliant, Sliding, Thermal Interface for Use in a High Temperature, Vacuum Microgravity Furnace. For presentation at Tenth Thermal & Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.			
BELLONI, T.	University of Amsterdam	BLAKESLEE, R.J.	HR20
VAN DEN ANCKER, M.	University of Amsterdam	KOSHAK, W.J.	HR20
DIETERS, S.	UAH	BAILEY, J.C.	Pace and Waite
FENDER, R.	University of Amsterdam	Application of Linear Analytic Techniques for Lightning Location Retrieval for Advanced Lightning Direction Finder (ALDF) Networks. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.	
FOX, D.W.	MIT		
KOMMERS, J.M.	MIT		
LEWIN, W.H.G.	MIT		
VAN PARADIJS, J.	UAH		
HARMON, B.A.	ES84	BLANCHARD, G.T.	SE LA University
On the Nature of XTE J0421+560/C1 Cam. For publication in American Astronomical Society, Chicago, IL, 1999.		LYONS, L.R.	ES83
BELYAEV, M.Y.	RSC-Energia	SPANN, J.F., JR.	ES83
RULEV, D.N.	RSC-Energia	REEVES, G.D.	ES83
STAZHKOV, V.M.	RSC-Energia	On the Predictability of Substorms Following Sharp Northward Turnings of the IMF. For presentation at Fall American Geophysical Union Meeting, San Francisco, CA, December 6–10, 1998.	
MELTON, T.L.	FD32		
Principles for Payload Operation Integration on the <i>International Space Station</i> . For presentation at Tsiolkovski Conference, Kaluga, Russia, September 14–17, 1999.		BLANCHARD, G.T.	Southeastern Louisiana
		LYONS, L.R.	University of California
		SPANN, J.F., JR.	SD50



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Predictions of Substorms and Intensifications Following Northward Turnings. For publication in <i>Journal of Geophysical Review</i> , 1999.		GOODMAN, S.J.	HR20
		CHRISTIAN, H.J., JR.	HR20
BLYTH, A.M.	HR20	Optical Observations of Lightning in Northern India Himalayan Mountain Countries and Tibet. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.	
CHRISTIAN, H.J., JR.	HR20		
LATHAM, J.	HR20	BOLOTNIKOV, A.	Caltech
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		Studies of Light and Charge Produced by Alpha-Particles in High-Pressure Xenon. For publication in <i>Nuclear Instruments and Methods in Physics Research A</i> OO, 1999.	
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CHRISTIAN, H.J.	HR20	BOOKOUT, P.S.	ED23
Optical Detection of Lightning From Space. For presentation at 1998 International Lightning Detection Conference, Tucson, AZ, November 16–18, 1998.		RICKS, E.	ED23
		Evaluation of MPLM Design and Mission 6A Coupled Loads Analyses. For presentation at 17th International Modal Analysis Conference, Kissimmee, FL, February 1999.	
BOCCIPPIO, D.J.	HR20		
DRISCOLL, K.	HR20	BOTTCHER, M.	Rice University
KOSHAK, W.J.	HR20	PETRY, D.	Universitat Autònoma de Barcelona
BLAKESLEE, R.	HR20	CONNAUGHTON, V.	SD50
BOECK, W.	Niagara University	LAHTENMAKI, A.	Tuorla Observatory, Finland
MACH, D.	UAH	PURISMO, T.	Tuorla Observatory, Finland
CHRISTIAN, H.J.	HR20	RAITERI, C.M.	Strada Osservatorio, Italy
GOODMAN, S.J.	HR20	SCHRODER, F.	Universitat Wuppertal, Germany
Cross-Sensor Validation of the Optical Transient Detector (OTD). For publication in <i>Journal of Atmospheric and Oceanic Technology (AMS)</i> , 1998/1999.		SILLANPAA, A.	Tuorla Observatory
		SOBRITO, G.	Strada Osservatorio, Italy
		ET AL.	
BOCCIPPIO, D.J.	HR20	Multiwavelength Observations of Mkn 501 During the 1997 High State. For publication in <i>Astrophysical Journal</i> , July 1999.	
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A Diagnostic Analysis of the Kennedy Space Center LDAR Network. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.		Voice Over the Net (VON) and Its Use in NASA's <i>International Space Station</i> Science Operation. For presentation at VON Fall 99 Conference, Atlanta, GA, September 27–30, 1999.	
BOCCIPPIO, D.J.	HR20		
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GOODMAN, S.J.	HR20		
Land-Ocean Differences in LIS and OTD Tropical Lightning Observations. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.		BRAINERD, J.J.	ES84
		PENDLETON, G.N.	ES84
BOECK, W.L.	Niagara University	MALLOZZI, R.S.	ES84
MACH, D.M.	HR20		

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PREECE, R.D.	ES84	PARKS, G.K.	Univ. of Washington, Seattle
The Role of the BATSE Instrument Response in Creating the GRB E-Peak Distribution. For publication in Proceedings of the 20th Texas Symposium, December 1998.		GERMANY, G.A.	UAH/CSPAR
		SPANN, J.F., JR.	ES83
		What the Polar Cap Tells Us About the Substorm Growth Phase. For presentation at 1998 American Geophysical Union Fall Meeting, San Francisco, CA, December 6–10, 1998.	
BRAINERD, J.J.	ES84	BRITTNACHER, M.J.	University of Washington
A Plasma Instability Theory of Gamma-Ray Burst Emission. For publication in The Astrophysical Journal, 1999.		CHUA, D.	University of Washington
		FILLINGIM, M.	University of Washington
BRIGGS, M.S.	ES84	PARKS, G.K.	University of Washington
BAND, D.L.	ES84	SPANN, J.F., JR.	ES83
PREECE, R.D.	ES84	GERMANY, G.A.	UAH/CSPAR
PACIESAS, W.S.		CARLSON, C.W.	University of California
PENDLETON, G.N.	ES84	GREENWALD, R.A.	Johns Hopkins
Analysis of Line Candidates in Gamma-Ray Bursts Observed by BATSE. For publication in Proceedings of INTEGRAL Conference, Amsterdam, The Netherlands, Spring 1999.		Global Dynamics of Dayside Auroral Precipitation in Conjunction With Solar Wind Pressure Pulses. For presentation at 1999 Spring AGU Meeting, Boston, MA, May 31–June 4, 1999.	
BRIGGS, M.S.	ES84	BRITTNACHER, M.J.	University of Washington
BAND, D.L.		WILBER, M.	University of Washington
KIPPEN, R.D.		FILLINGIM, M.	University of Washington
KOUVELIOTOU, C.		CHUA, D.	University of Washington
VAN PARADIJS, J.		PARKS, G.K.	University of Washington
SHARE, G.H.		SPANN, J.F., JR.	ES83
MURPHY, R.J.		GERMANY, G.	UAH/CSPAR
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CONNORS, A.		BRITTNACHER, M.J.	University of Washington
ET AL.		FILLINGIM, M.	University of Washington
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BRITTNACHER, M.J.	University of Washington	KANG, J.	University of Washington
FILLINGIM, M.	University of Washington	PARKS, G.K.	University of Washington
CHUA, D.	University of Washington	SPANN, J.F., JR.	University of Washington
WILBER, M.	University of Washington	GERMANY, G.A.	UAH/CSPAR
PARKS, G.K.	University of Washington	Global Observations of Poleward Moving Aurora on the Dayside. For presentation at 1999 Fall AGU Meeting, San Francisco, CA, December 13–17, 1999.	
GERMANY, G.A.	UAH/CSPAR	BRITTNACHER, M.J.	University of Washington
SPANN, J.F., JR.	ES83	CHUA, D.	University of Washington
Global Observation of Substorm Growth Phase Processes in the Polar Caps. For presentation at Huntsville 98 Meeting, Guntersville, AL, October 28, 1998.		FILLINGIM, M.O.	University of Washington
		PARKS, G.K.	University of Washington
BRITTNACHER, M.J.	Univ. of Washington, Seattle	SPANN, J.F., JR.	University of Washington
FILLINGIM, M.	Univ. of Washington, Seattle	GERMANY, G.A.	UAH/CSPAR
CHUA, D.	Univ. of Washington, Seattle		

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Dynamics of the Auroral Luminosity Boundary of the Polar Cap During Substorms. For presentation at The 22nd General Assembly of the International Union of Geodesy and Geophysics, The University of Birmingham, UK, July 18–30, 1999.		BURGER, A.	Fisk University
		NDAP, J.-O.	Fisk University
		CHATTOPADHYAY, K.	Fisk University
		MA, X.	Fisk University
		SILBERMAN, E.	Fisk University
		FETH, S.	ES75
		PALOSZ, W.	ES75
		SU, C.-H.	ES75
		In-Situ Optical Determination of Thermomechanical Properties of ZnSe and ZnTe Crystals. For presentation at 44th SPIE Annual Meeting, Denver, CO, July 18–23, 1999.	
BROWN, A.M.	ED23	CANNON, J.L.	EP74
FERRI, A.A.	Georgia Institute of Technology	KATZ, A.	Wright Patterson Air
Application of the Probabilistic Dynamic Synthesis Method to Realistic Structures. For publication in AIAA Journal, 1999.		BAMPTON, C.	Boeing/Rocketdyne
BUECHLER, D.	HR20	MARCHOL, P.	Aerojet
GOODMAN, S.J.	HR20	RHEMER, C.	Pratt & Whitney
KNUPP, K.	HR20	EFFINGER, M.	EP74
MCCAUL, E.W., JR.	HR20	GENGE, G.	EP74
Lightning Variations in the Southeastern United States Related to the Winter 1997–98 El Nino Event. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.		Launch & Propulsion Systems Materials and Process and Development for Rocket Engine Components: “Turbomachinery.” For presentation at National Space & Missile Materials Symposium, Colorado Springs, CO, October 19–22, 1998.	
BUECHLER, D.E.	UAH	CARDELINO, C.A.	Georgia Institute of Technology
GOODMAN, S.J.	HR20	MOORE, C.E.	SD47
CHRISTIAN, H.J.	HR20	CARDELINO, B.H.	Spelman College
DRISCOLL, K.	UAH	ZHOU, N.	CFD Research Corp.
Optical Transient Detector (OTD) Observations of a Tornadoic Thunderstorm. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.		LOWRY, S.	CFD Research Corp.
BUNE, A.	USRA	KRISHNAN, A.	CFD Research Corp.
GILLIES, D.C.	ES75	FRAZIER, D.O.	SD47
LEHOCZKY, S.	ES75	BACHMANN, K.J.	North Carolina State
Effects of Gravity on the Double-Diffusive Convection During Directional Solidification of a Non-Dilute Alloy with Application to the HgCdTe. For presentation at SPIE’s 44th Meeting, Denver, CO, July 18–23, 1999.		Development of an Advanced Computational Model for OMCVD of Indium Nitride. For publication in Proceedings of SPIE Photonics West, San Jose, CA, January 23–29, 1999.	
BUNE, A.V.	USRA	CARRASQUILLO, R.L.	FD21
SEN, S.	USRA	BERTOTTO, D.	Alenia Spazio
STEFANESCU, D.M.	University of Alabama	ECLSS Design for the <i>International Space Station</i> Nodes 2 & 3. For presentation at 29th International Conference on Environmental Systems, Denver, CO, July 1999.	
CURRERI, P.A.	ES75	CARRUTH, M.R.	EH11
Numerical Analysis of Temperature Gradients and Interface Shape During Directional Solidification of Al and Al-Cu Under Microgravity Conditions. For presentation at 3rd International Conference on Solidification & Gravity, Miskole, Hungary, April 26–29, 1999.		CLIFTON, K.S.	EH11
		An Environment Monitoring Package for the <i>International Space Station</i> . For presentation at Space Technology & Applications International Forum (STAIF-99), Albuquerque, NM, January 31–February 4, 1999.	



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CARRUTH, M.R., JR.	ED31	Time-Temperature-Precipitation Behavior in an Al-Cu-Li Alloy 2195. For presentation at TMS Spring 1999 Meeting on Light Weight Materials for Aerospace Applications, San Diego, CA. For publication in Proceedings of TMS Spring 1999 Meeting on Light Weight Materials for Aerospace Applications, San Diego, CA, Spring 1999.
VAUGHN, J.	ED31	
Increasing Importance of Material Electrical Interaction with the Space Environment. For presentation at 8th Symposium International on Materials in a Space Environment, Arcachon, France, June 8, 2000.		
CARUSO, S.V.	ED36	
Precision Cleaning and Verification Processes Used at Marshall Space Flight Center for Critical Hardware Applications. For presentation at Solvent Substitution Conference, Scottsdale, AZ, September 13-16, 1999.		
CATALINA, A.V.	USRA	
SEN, S.	USRA	
STEFANESCU, D.M.	UAH	
CURRERI, P.A.	SD47	
KAUKLER, W.F.	UAH	
Numerical Modeling and In-Situ Observations of the Dynamics of the Solid Liquid Interface Morphology During Directional Solidification of Alloys. For presentation at Model, Cast, Weld, and Adv. Solid Process, Aachen, Germany, August 20, 2000.		
CHAKRABARTI, S.	Penn State University	
SCHMIDT, G.R.	TD40	
THIO, Y.C.	TD40	
HURST, C.M.	Purdue University	
A Preliminary Model for Spacecraft Propulsion Performance Analysis Based on Nuclear Gain and Subsystem Mass-Power Balances. For presentation at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Los Angeles, CA, June 20-24, 1999.		
CHANDLER, M.O.	ES83	
CRAVEN, P.D.	ES83	
MOORE, T.E.	GSFC	
Ion Signatures of Magnetospheric Regions and Boundaries: The September 24, 1998 CME Event. For presentation at 1999 Spring American Geophysical Union Meeting, Boston, MA, June 1999.		
CHANDLER, M.O.	SD50	
CRAVEN, P.D.	SD50	
Ion Transport in the September 24, 1998 CME Event. For presentation at IGPP Conference, Yellowstone, WY, September 19-25, 1999.		
CHEN, P.S.	IIT Research Institute	
BHAT, B.N.	EH23	
CHOU, S.-H.	HR20	
Wavenumber Vacillation in Weakly-Stratified Baroclinic Flows. For presentation at 12th Conference on Atmospheric and Oceanic Fluid Dynamics, New York, NY, June 7-11, 1999.		
CHOUDHARY, D.P.	ES82	
GARY, G.A.	ES82	
Magnetic Field Configuration of Active Region NOAA 6555 at the Time of a Long Duration Flare on 23 March 1991. For publication in Solar Physics, Tucson, AZ, 1998.		
CHOUDHARY, D.P.	ES82	
GARY, G.A.	ES82	
AMBASTHA, A.K.	Udaipur Solar	
Complex Halphi Loop Activity in a Long Duration Flare. For publication in Proceedings of Sac Peak Workshop/Conference, Sac Peak, AZ, October 20-23, 1998.		
CHRISTENSEN, E.	Sverdrup	
NESMAN, T.E.	ED32	
Fastrac Rocket Engine Combustion Chamber Acoustic Cavities. For presentation at 10th Annual Penn State PERC Symposium on Propulsion, Huntsville, AL, October 26-27, 1998.		
CHRISTIAN, H.J.	HR20	
BLAKESLEE, R.J.	HR20	
BOCCIPPIO, D.J.	HR20	
BOECK, W.L.	Niagara University	
BUECHLER, D.E.	UAH	
DRISCOLL, K.T.	UAH	
GOODMAN, S.J.	HR20	
HALL, J.M.	CSC	
KOSHAK, W.J.	HR20	
ET AL.		
Global Frequency and Distribution of Lightning as Observed by the Optical Transient Detector (OTD). For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7-11, 1999.		

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CHRISTL, M.J.	SD50	CISSOM, R.D.	EO31
BENSON, C.M.	SD50	MELTON, T.L.	EO31
BERRY, F.A.	SD50	SCHNEIDER, M.P.	EO31
FOUNTAIN, W.F.	SD50	LAPENTA, C.C.	EO31
GREGORY, J.C.	UAH	Payload Operations. For presentation at Space	
JOHNSON, J.S.	USRA/SD50	Technology & Applications International Forum	
MUNROE, R.B.	University of Mobile	(STAIF-99), Albuquerque, NM, January 31-February	
PARNELL, T.A.	UAH	4, 1999.	
TAKEHASHI, Y.	UAH		
WATTS, J.W.	SD50	CLARK-INGRAM, M.	EH42
The Scintillating Optical Fiber Calorimeter Instrument		NASA/Air Force/Environmental Protection Agency	
Performance (SOFICAL). For presentation at 26th		Interagency Depainting Study. For presentation at	
International Cosmic Ray Conference, Salt Lake City,		Using Environmental Safety & Occupational Progress	
UT, August 17-25, 1999.		to Reduce Life Cycle Cost, Morristown, NJ, November	
		18-19, 1998.	
CHU, T.P.	Southern Illinois	CLAYTON, J.L.	ED63
DIGREGORIO, A.	Southern Illinois	Reusable Solid Rocket Motor Nozzle Joint-4 Test	
RUSSELL, S.S.	EH13	Correlated Gas Dynamic-Thermal Analysis. For	
The Effect of Penetration Depth on Thermal Contrast		presentation at AIAA 35th Joint Propulsion	
of NDT by Thermography. For presentation at 1999		Conference, Los Angeles, CA, June 20-24, 1999.	
American Society for Nondestructive Testing Spring			
Conference, Orlando, FL, March 22, 1999.			
CHUA, D.	University of Washington	CLINTON, R.G., JR.	ED34
BRITTNACHER, M.J.	University of Washington	LEDBETTER, F.E., III	ED34
PARKS, G.K.	University of Washington	EFFINGER, M.R.	ED34
GERMANY, G.A.	UAH/CSPAR	NASA's Reusable Launch Vehicle Technologies—A	
SPANN, J.F., JR.	ES83	Composite Materials Overview. For presentation at	
A New Synoptic Scale Feature of the Auroral Oval:		Advanced Composite Materials Regional Technical	
The Nightside Gap. For presentation at Huntsville 98		Conference, Tempe, AZ, September 9-10, 1999.	
Meeting, Guntersville, AL, October 29, 1998.			
CHUA, D.H.	University of Washington	CLOUD, D.	Hamilton Standard
BRITTNACHER, M.J.	ES83	BAGDIGIAN, R.	FD21
PARKS, G.K.	ES83	Oxygen Generation Assembly Technology	
GERMANY, G.A.	UAH/CSPAR	Development. For presentation at 29th International	
SPANN, J.F., JR.	ES83	Conference on Environmental Systems, Denver, CO,	
The Nightside Auroral Gap: Implications for		July 12-15, 1999.	
Magnetosphere-Ionosphere Coupling in the Midnight			
Auroral Zone. For presentation at 1998 Fall American		COBB, S.D.	ES75
Geophysical Union Meeting, San Francisco, CA,		LEHOCZKY, S.L.	ES75
December 6-10, 1998.		SZOFRAN, F.R.	ES75
CHUNG, T.J.	UAH	JONES, K.S.	University of Florida
SCHUNK, R.G.	ED26	Microstructural Development of Directionally	
CANABAL, F.	UAH	Solidified Hg <sub>1-x</sub> ZnXSe Alloys. For presentation at	
HEARD, G.	UAH	1998 U.S. Workshop in the Physics and Chemistry of	
Unified CFD Methods Via Flowfield-Dependent		II-VI Materials, Charleston, SC, October 20-22, 1998.	
Variation Theory. For presentation at 30th AIAA Fluid			
Dynamics Conference & Exhibit, Norfolk, VA, June		COBB, S.D.	ES75
28-July 1, 1999.		SZOFRAN, F.R.	ES75
		JONES, K.S.	University of Florida
		LEHOCZKY, S.L.	ES75

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Microstructural Development of Directionally Solidified Hg <sub>1-x</sub> Zn <sub>x</sub> Se Alloys. For publication in Journal of Electronic Materials, 1998.		COHEN, C.	HR20
COBB, S.D.	ES75	A Quantitative Investigation of Entrainment and Detrainment in Numerically Simulated Convective Clouds; Part I: Model Development. For publication in Journal of Atmospheric Science, 1999.	
SZOFRAN, F.R.	ES75	COHEN, C.	HR20
SCHAEFER, D.A.	ES75	A Quantitative Investigation of Entrainment and Detrainment in Numerically Simulated Convective Clouds; Part II: Simulations of Cumulonimbus Clouds. For publication in Journal of Atmospheric Science, 1999.	
Preliminary Concepts for the Materials Science Research Facility on the <i>International Space Station</i> . For publication in Proceedings of the Space Technology & Applications International Forum (STAIF-99), January 31, 1999.		COLE, H.	EB52
COBB, S.D.	ES75	CHAMBERS, D.	UAH
SZOFRAN, F.R.	ES75	Efficient IR Transmission Diffraction Gratings for Circularly Polarized Light. For presentation at SPIE 44th Annual Meeting, Denver, CO, July 18-23, 1999. For publication in Proceedings of SPIE 44th Annual Meeting, Denver, CO, July 18-23, 1999.	
VOLZ, M.P.	ES75	COLE, H.J.	EB52
Effect of Interface Shape and Magnetic Field on the Microstructure of Bulk Ge:Ga. For presentation at ACCGE-11 American Conference on Crystal Growth & Epitaxy, Tucson, AZ, August 1-6, 1999.		CHAMBERS, D.M.	UAH
COBB, S.D.	SD47	DIXIT, S.N.	Lawrence Livermore
LEHOCZKY, S.L.	SD47	BRITTEN, J.A.	Lawrence Livermore
SZOFRAN, F.R.	SD47	SHORE, R.W.	Lawrence Livermore
JONES, K.S.	University of Florida	KAVAYA, M.J.	HR20
Effects of an Applied Magnetic Field on the Directional Solidification of Hg <sub>1-x</sub> Zn <sub>x</sub> SE Alloys. For presentation at 1999 Gordon Research Conference, Henniker, NH, June 27-July 2, 1999.		Rectangular Relief Diffraction Gratings for Coherent Lidar Beam Scanning. For presentation at 1999 Coherent Laser Radar Conference, Mt. Hood, OR, June 28-July 2, 1999. For publication in Proceedings of 1999 Coherent Laser Radar Conference, Mt. Hood, OR, June 28-July 2, 1999.	
COFFEY, V.N.	ES83	COLE, J.	TD15
CHANDLER, M.O.	ES83	SCHMIDT, G.R.	TD40
POLLOCK, C.J.	ES83	Overview of MSFC Propulsion Research & Technology. For presentation at 10th Annual NASA/JPL/MSFC/AIAA Workshop, Huntsville, AL, April 5-8, 1999.	
MOORE, T.E.	ES83	COMFORT, R.H.	UAH
Thermal Electron Results From the CAPER Sounding Rocket. For presentation at 1999 Spring AGU Meeting, Boston, MA, May 30-June 4, 1999. For publication in Proceedings of 1999 Spring AGU Meeting, Boston, MA, May 30-June 4, 1999.		RICHARDS, P.G.	ES83
COFFEY, V.N.	SD50	LIAO, J.-H.	ES83
VAISBERG, O.L.	SD50	CRAVEN, P.D.	ES83
GALLAGHER, D.L.	SD50	Evolution of Plasmaspheric Refilling: A Comparison of Measurements With an Interhemispheric Plasmasphere Model. For presentation at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG99), Birmingham, England, August 18-30, 1999.	
CHANDLER, M.O.	SD50		
Low Energy Plasma in the Outer Magnetosphere as Observed by Interball Tail Probe. For presentation at American Geophysical Union 1999 Fall Meeting, San Francisco, CA, December 13, 1999.			

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CONNAUGHTON, V.	ES84	CROELL, A.	SD47
ROBINSON, C.R.	USRA	SCHWEIZER, M.	SD47
MCCOLLOUGH, M.L.	USRA	DOLD, P.	SD47
LAURENT-MUEHLEISEN, S.	Lawrence Livermore	KAISER, T.	SD47
BATSE Observations of BL Lac Objects. For publication in Proceedings of Astronomical Society of the Pacific Conference, Turku, Finland, June 1998.		LICHTENSTEIGER, M.	SD47
		BENZ, K.W.	SD47
		Measurement of Temperature Fluctuations and Microscopic Growth Rates in a Silicon Floating Zone Under Microgravity. For presentation at American Association for Crystal Growth, Tucson, AZ, August 2, 1999.	
COOPER, K.	ED34		
WELLS, D.	ED34		
SALVAIL, P.	IIT Research Institute		
VESELY, E.	IIT Research Institute		
Materials Selection and Their Characteristics as Used in Rapid Prototyping. For presentation at Investment Casting Institute Technology Meeting, San Francisco, CA, October 31–November 3, 1999.		CROELL, A.	NRC/SD47
		DOLD, P.	NRC/SD47
		KAISER, T.	NRC/SD47
		SZOFRAN, F.R.	SD47
		BENZ, K.W.	NRC/SD47
		The Influence of Static and Rotating Magnetic Fields on Heat and Mass Transfer in Silicon Floating Zones. For publication in Journal of the Electrochemical Society, 1999.	
CRAVEN, P.D.	ES83		
SPANN, J.F., JR.	ES83		
CHANDLER, M.O.	ES83		
GERMANY, G.A.	UAH/CSPAR		
MOORE, T.E.	ES83		
Ionospheric Response to the CME Passage of September 24, 1998. For presentation at 1999 Spring AGU Meeting, Boston, MA, May 31–June 4, 1999.		CROUCH, M.R.	SD42
		CARSWELL, B.	UAH
		FARMER, J.	ED25
		ROSE, F.	Pace and Waite
CRAWFORD, K.	EB33	TIDWELL, P.H., III	Microcraft, Inc.
PINKLETON, D.	Boeing	NASA/First Materials Science Research Rack (MSRR–1) Module Inserts Development for the <i>International Space Station</i> . For presentation at Space Technology and Application International Forum (STAIF–00), Albuquerque, NM, January 30–February 3, 2000.	
Using a Commercial Off the Shelf Data Acquisition System for the Space Shuttle Solid Rocket Booster Program. For presentation at International Telemetry Conference, Las Vegas, NV, October 25–28, 1999.			
CRAWFORD, K.	EB33		
HUBER, H.	EB33	CROUCH, M.R.	SD42
PINKLETON, D.	Boeing	CARSWELL, B.	UAH
JUNEN, K.	Boeing	FARMER, J.	SD42
Update of the Development of a Low Cost Data Acquisition System for the Space Shuttle Solid Rocket Booster Program. For presentation at Digital Avionics Systems Conference, St. Louis, MO, October 23–29, 1999.		ROSE, F.	Pace and Waite
		TIDWELL, P.H., III	Micro Craft, Inc.
		Insert Concepts for the Material Science Research Rack 1 (MSRR–1) of the Material Science Research Facility (MSRF) on the <i>International Space Station</i> . For presentation at TMS Minerals, Metals, Materials Society Meeting, Nashville, TN, March 12–16, 2000.	
CRAWFORD, L.	ES76		
KARR, L.J.	ES76		
NADARAJAH, A.	ES76	CROUCH, M.R.	SD42
PUSEY, M.L.	ES76	CARSWELL, W.E.	UAH
Tetragonal Lysozyme Interactions Studied by Site Directed Mutagenesis. For presentation at American Crystallographic Association, Buffalo, NY, May 24, 1999.		FARMER, J.	SD42
		ROSE, F.	Pace & Waite
		TIDWELL, P.H., III	Micro Craft, Inc.

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Quench Module Insert (QMI) and the Diffusion Module Insert (DMI) Furnace Development. For presentation at Space Technology and Application International Forum (STAIF-00), Albuquerque, NM, January 30, 2000.		DELIBERTY, T.	University of Delaware
		CALLAHAN, J.	University of Delaware
		GUILLORY, A.R.	SD60
		JEDLOVEC, G.	SD60
		A Regional-Scale Assessment of Satellite Derived Precipitable Water Vapor Across the Amazon Basin. For presentation at 10th Conference of Satellite Meteorology & Oceanography, Long Beach, CA, January 10-14, 2000.	
CRUZEN, C.A.	ED13	DERRICKSON, J.H.	SD50
LOMAS, J.J.	ED13	WU, J.	Fayetteville State
Design of the Automated Rendezvous and Capture Docking System. For presentation at AIAA/ISS Service Vehicle Conference, Houston, TX, April 25-28, 1999.		CHRISTL, J.J.	SD50
CUMNOCK, J.A.		FOUNTAIN, W.F.	SD50
SPANN, J.F., JR.	SD50	PARNELL, T.A.	UAH
GERMANY, G.A.	UAH/CSPAR	An Application of the Direct Coulomb Electron Pair Production Process to the Energy Measurement of the "VH-Group" in the "Knee" Region of the "All-Particle" Energy Spectrum. For presentation at 26th International Cosmic Ray Conference, Salt Lake City, UT, August 17-25, 1999.	
BLOMBERG, L.G.		DEXTER, C.E.	RA50
COLEY, W.R.		KOS, L.D.	PD32
BRITTNACHER, M.J.	University of Washington	An Overview of Mars Vicinity Transportation Concepts for a Human Mars Mission. For presentation at 10th Annual Propulsion Symposium, Huntsville, AL, October 26-27, 1998.	
PARKS, G.K.	University of Washington	DIMMOCK, J.O.	UAH
CLAUER, C.R.		ADAMS, M.	ES82
Polar UVI Observations of Auroral Oval Intensifications During a Transpolar Arc Event on December 7, 1996. For publication in Journal of Geophysical Review, 1999.		SEVER, T.	GHCC
CURRY, K.	Alabama A&M University	Theories of the Universe: A One Semester Course for Honors Undergraduates. For presentation at Fourth Biennial History of Astronomy Workshop, University of Notre Dame, IL, July 2, 1999.	
AGGARWAL, M.D.	Alabama A&M University	DING, R.J.	EH23
CHOI, J.	Alabama A&M University	OELGOETZ, P.A.	Boeing
WANG, W.S.	Alabama A&M University	Mechanical Property Analysis in the Retracted Pin-Tool (RPT) Region of Friction Stir Welded (FSW) Aluminum Lithium 2195. For presentation at International Seminar on Friction Stir Welding, Thousand Oaks, CA, June 15-16, 1999.	
LAI, R.B.	Alabama A&M University	DISCHINGER, H.C., JR.	ED42
PENN, B.G.	ES76	TILGHMAN, N.C.	LMCO
FRAZIER, D.O.	ES76	HAMMONS, M.	TRW
Melt Growth of a Nonlinear Optical Organic Crystal Triethylphosphine Sulfide Using Modified Bridgman-Stockbarger Technique. For presentation at International Symposium on Optical Science, Denver, CO, July 19, 1999.		HALE, J.P., II	ED42
		Duet: A Distributed Usability Lab Supporting Displays Development for Space Station. For presentation at 43rd	
DAISUKE, N.			
SULKANEN, M.E.	ES84		
EVRARD, A.E.			
A Multiphase Model for the Intracuster Medium. For publication in Royal Astronomical Society Monthly Notices, London, England, 1999.			
DALY, M.	ES76		
SRIDHAR, R.	ES76		
RICHMOND, R.	ES76		
Extremes of Survival Achieved by the Radiophile Deinococcus Radiodurans: A Model for Microbial Life on Mars. For presentation at SPIE Conference, Denver, CO, July 18-21, 1999. For publication in Proceedings of SPIE Conference, Denver, CO, July 18-21, 1999.			



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Annual Meeting, Human Factors & Ergonomics Society, Houston, TX, September 27–October 1, 1999.		DORNEY, D.J.	Virginia Commonwealth
		GRIFFIN, L.W.	ED32
		GUNDY-BURLET, K.L.	Ames Research Center
		Simulations of the Flow in Supersonic Turbines With Straight Centerline Nozzles. For presentation at AIAA Reno Conference, Reno, NV, January 16, 1999.	
DOBSON, C.C.	EP93	DRAKE, J.J.	ES84
SUNG, C.C.	UAH	SWARTZ, D.A.	ES84
Laser Induced Optical Pumping Measurements of Cross Sections for Fine and Hyperfine Structure Transitions in Sodium Induced by Collisions with Helium and Argon Atoms. For publication in Physical Review Letters, Ridge, NY, 1999.		BEIERSDORFER, P.	ES84
		BROWN, G.	ES84
DOBSON, C.C.	EP63	KAHN, S.	ES84
Laser-Induced Fluorescence Measurements of Translational Temperature and Relative Cycle Number by Use of Optically Pumped Trace-Sodium Vapor. For publication in Applied Optics, Volume 38, No. 18, Washington, DC, June 20, 1999.		On Photospheric Fluorescence and the Nature of the 17.62 Angstrom Feature in Solar X-Ray Spectra. For publication in Astrophysical Journal, Chicago, IL, 1999.	
DOLD, P.	University of Freiburg	DRAKE, J.J.	ES84
CROLL, A.	University of Freiburg	SWARTZ, D.A.	ES84
SCHWEIZER, M.	University of Freiburg	Coronally Fluoresced Stellar Photospheric X-Ray Spectra. For presentation at AAS/HEAD, Charleston, SC, April 12–15, 1999.	
KAISER, T.	University of Freiburg		
SZOFRAN, F.	ES75	DRISCOLL, K.T.	HR20
NAKAMURA, S.	NEC Fundamental	CHRISTIAN, H.J.	HR20
HIGIYA, T.	NEC Fundamental	GOODMAN, S.J.	HR20
BENZ, K.W.	University of Freiburg	A Comparison Between Lightning Activity and Passive Microwave Measurements. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.	
The Role of Marangoni Convection for the FZ-Growth of Silicon. For publication in Proceedings of International Astronautical Federation, Melbourne, Australia, September 28–October 2, 1998.			
DOLD, P.	University of Freiburg	DUNN, M.C.	Southern University
SCHWEIZER, M.	University of Freiburg	HUTCHINSON, S.L.	EO66
SZOFRAN, F.	ES75	A Human Factors Framework for Payload Display Design. For presentation at National Society of Black Engineers Fall Regional Conference, Lexington, KY, October 30–November 1, 1998.	
BENZ, K.W.	University of Freiburg		
Detached Growth of Germanium and Germanium-silicon. For presentation at ACCGE–11 Conference, Tucson, AZ, August 1–6, 1999.		DUNN, M.C.	Southern University
		HUTCHINSON, S.L.	EO66
DOLD, P.	NRC/SD47	Human Factors Engineering at Marshall Space Flight Center. For presentation at National Society of Black Engineers 25th Annual National Convention, Kansas City, MO, March 24–28, 1999.	
CROLL, A.	NRC/SD47		
SZOFRAN, F.R.	SD47		
NAKAMURA, S.	NRC/SD47		
HIGIYA, T.	NRC/SD47		
BENZ, K.W.	NRC/SD47	EDWARDS, D.L.	EH12
The Role of Marangoni Convection for the FZ-Growth of Silicon. For publication in Microgravity Quarterly, 1999.		Prediction and Measurement of X-Ray Spectral and Intensity Distributions From Low Energy Electron Impact Sources. For publication in Proceedings of 44th International SAMPE Symposium, Long Beach, CA, May 23–27, 1999.	

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EDWARDS, D.L.	ED31	The Urban Heat Island Phenomenon and Potential Mitigation Strategies. For presentation at American Planning National Conference, Seattle, Washington, April 24–28, 1999. For publication in Proceedings of the American Planning National Conference, Seattle, Washington, April 24–28, 1999.
FINCKENOR, M.M.	ED31	
Optical Analysis of Transparent Polymeric Material Exposed to Simulated Space Environment. For presentation at 8th International Symposium on Materials in a Space Environment, Arcachon, France, June 5–9, 2000.		
ELLIOTT, H.A.	UAH	FALCONER, D.A. ES82/UAH
COMFORT, R.H.	UAH	MOORE, R.L. ES82
CHANDLER, M.O.	ES83	PORTER, J.G. ES82
CRAVEN, P.D.	ES83	HATHAWAY, D.H. ES82
MOORE, T.E.	GSFC	Large-Scale Coronal Heating, Clustering of Coronal Bright Points, and Concentration of Magnetic Flux. For publication in Proceedings of SOHO 7 Conference, Northeast Harbor, Maine, September 1998.
Velocity and Density of Low Energy Ions in High-Latitude Magnetosphere. For presentation at 1999 Spring American Geophysical Union Meeting, Boston, MA, June 1999.		
EMERSON, C.W.	Southwest Missouri	FALCONER, D.A. ES82
LAM, N.S.	Louisiana State	GARY, G.A. ES82
QUATTROCHI, D.A.	HR20	MOORE, R.L. ES82
Multi-Scale Fractal Analysis of Image Texture and Pattern. For publication in Photogrammetric Engineering and Remote Sensing, 1998/1999.		PORTER, J.G. ES82
		An Assessment of Magnetic Conditions for Strong Coronal Heating in Solar Active Regions by Comparing Observed Loops With Computed Potential Field Lines. For publication in The Astrophysical Journal, 1999.
ENGERG, R.	ED73	FALCONER, D.A. ES82
LASSITER, J.	ED73	MOORE, R.L. ES82
Dynamic Testing of an Inflatable Structure Under Thermal Vacuum Conditions. For presentation at AIAA Structures, Structural Dynamics & Materials Conference, St. Louis, MO, April 12–15, 1999.		PORTER, J.G. ES82
		HATHAWAY, D.H. ES82
		Large-Scale Coronal Heating From the Solar Magnetic Network. For presentation at American Astronomical Society (AAS), Chicago, IL, May 30, 1999.
ENGBERG, R.	ED73	FALCONER, D.A. SD50/UAH
LASSITER, J.	ED73	MOORE, R.L. SD50
Dynamic Testing of an Inflatable Structure Under Thermal Vacuum Conditions. For publication in Sound and Vibration (ISSN 0038–1810), Acoustical Publications, Inc., Bay Village, OH, 1999.		PORTER, J.G. SD50
		HATHAWAY, D.H. SD50
		Large-Scale Coronal Heating From “Cool” Activity in the Solar Magnetic Network. For publication in American Geophysical Union Meeting, San Francisco, CA, December 13, 1999.
ESTES, M.	USRA	FEDOSEYEV, A.I. UAH
QUATTROCHI, D.A.	HR20	KANSA, E.J. Embry-Riddle
LUVALL, J.	HR20	MARIN, C. UAH
Using Remote Sensing Data and Research Results for Urban Heat Island Mitigation. For presentation at National Conference on Environmental Decision Making, Knoxville, TN, April 11–14, 1999.		VOLZ, M.P. SD47
		OSTROGORSKY, A.G. UAH
ESTES, M.G., JR.	USRA	Magnetic Field Suppression of Flow in Semiconductor Melt. For presentation at 38th AIAA Aerospace Sciences Meeting, Reno, NV, January 13, 2000.
GORSEVSKI, V.	Environmental Protection Agency	
RUSSELL, C.	Utah Office of Energy	
QUATTROCHI, D.A.	HR20	
LUVALL, J.C.	HR20	

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FILLINGIM, M.	University of Washington	FISHMAN, G.J.	ES01
BRITTNACHER, M.	University of Washington	Observational Review of Gamma-Ray Bursts. For presentation at Results and Perspectives in Particle Physics, La Thuile, Italy, February 28–March 6, 1999.	
PARKS, G.K.	University of Washington		
GERMANY, G.A.	UAH/CSPAR		
SPANN, J.F., JR.	ES83	FISHMAN, G.J.	ES01
Solar Wind-Magnetosphere Coupling Influences on Pseudo-Breakup Activity. For presentation at Huntsville 98 Meeting, Guntersville, AL, October 28, 1998.		History and Observations of Gamma-Ray Bursts. For presentation at APS Meeting, Atlanta, GA, March 20–25, 1999.	
FILLINGIM, M.O.	University of Washington	FISHMAN, G.J.	ES01
BRITTNACHER, M.	University of Washington	Observational Review of Gamma-Ray Bursts. For presentation at Space Telescope Science Institute Symposium, Baltimore, MD, May 3–6, 1999.	
PARKS, G.K.	University of Washington		
GERMANY, G.A.	UAH/CSPAR		
SPANN, J.F., JR.	ES83	FISHMAN, G.J.	ES01
LIN, R.P.	ES83	Observations of Gamma-Ray Bursts. For presentation at The Neutron Star—Black Hole Connection/NATO Advanced Study Institute, Crete, Greece, June 16, 1999.	
Coincident UVI and WIND Observations of Pseudo-Breakups. For presentation at 1998 Fall American Geophysical Union Meeting, San Francisco, CA, December 6–10, 1998.			
FILLINGIM, M.O.	University of Washington	FLACHBART, R.	EP63
BRITTNACHER, M.	University of Washington	HOLT, B.	EP63
PARKS, G.K.	University of Washington	Zero Gravity Cryogenic Vent System Concepts for Upper Stages. For presentation at 1999 Space Cryogenics Workshop, Quebec, Canada, July 9–13, 1999.	
CHEN, L.J.	SD50		
GERMANY, G.A.	UAH/CSPAR	FLACHBART, R.H.	TD53
SPANN, J.F., JR.	SD50	HOLT, J.B.	TD53
LIN, R.P.	SD50	HASTINGS, L.J.	TD53
Magnetotail Plasma Signatures of Pseudobreakups and Substorms. For presentation at 1999 Fall AGU, San Francisco, CA, December 13–17, 1999.		Zero Gravity Cryogenic Vent System Concepts for Upper Stages. For presentation at 1999 Thermal and Fluids Workshop, Huntsville, AL, September 13–17, 1999.	
FINCKENOR, J.	ED52	FORSYTHE, E.L.	USRA
SPURRIER, M.	ED24	JUDGE, R.A.	ES76
Design Optimization and Analysis of a Composite Honeycomb Intertank. For presentation at 6th International Conference OPTI 99, Computer Aided Optimum Design of Structures, Orlando, FL, March 16–18, 1999.		PUSEY, M.L.	ES76
		Tetragonal Chicken Egg White Lysozyme Solubility in Sodium Chloride Solutions. For publication in Journal of Chemical Engineering Data, 1998/1999.	
FISHMAN, G.J.	ES01	FRAZIER, D.O.	ES01
The Mystery of Gamma-Ray Bursts. For presentation at AAVSO Annual Meeting, Boston, MA, October 30, 1998.		PALEY, M.S.	ES01
		PENN, B.G.	ES01
FISHMAN, G.J.	ES01	ABDELDAYEM, H.A.	ES01
Observational Review of Gamma-Ray Bursts. For presentation at Gamma-Ray Bursts in the Afterglow Era Workshop, Rome, Italy, November 3–6, 1998.		SMITH, D.D.	ES01
		WITHEROW, W.K.	ES01
		Space Product Development of Commercial NLO Materials. For presentation at Photonics East Conference, Boston, MA, November 3–5, 1998.	



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FRAZIER, D.O.	ES01	SANDEL, B.R.	University of Arizona
PENN, B.G.	ES01	CARPENTER, D.L.	Stanford University
PALEY, M.S.	ES01	The Plasmasphere as "Seen" by the IMAGE Mission.	
ABDELDAYEM, H.A.	ES01	For presentation at International Union of Radio	
WITHEROW, W.K.	ES01	Science, Toronto, Canada, August 14, 1999.	
SMITH, D.D.	ES01	GALLAGHER, D.L.	ES83
The Effects of Ground and Space Processing on the		KHAZANOV, G.V.	University of Alaska
Properties of Organic, Polymeric, and Colloidal		The Role of Instabilities in Plasmaspheric Heating, Flux	
Materials. For presentation at Fall 1998 MRS		Tube Refilling, and the Development of Spatial	
Conference (Materials Research Society), Boston, MA,		Structures. For presentation at International Union of	
November 30–December 4, 1998.		Radio Science, Toronto, Canada, August 14, 1999.	
FRAZIER, D.O.	ES01	GALLAGHER, D.L.	ES83
Evolution of Local Microstructures: Spatial Instabilities		CRAVEN, P.D.	ES83
of Coarsening Clusters. For presentation at		COMFORT, R.H.	UAH
Containerless Processing of Materials Conference, San		Empirical Modeling of the Plasmasphere. For	
Diego, CA, March 1–4, 1999.		presentation at USRI/COSPAR International Reference	
FUNG, S.F.	GSFC	Ionosphere Workshop, Lowell, MA, August 9–12, 1999.	
BENSON, R.F.	GSFC	GALLAGHER, D.L.	SD50
CARPENTER, D.L.	Stanford University	CRAVEN, P.D.	SD50
REINISCH, B.W.	University of Massachusetts	COMFORT, R.H.	UAH
GALLAGHER, D.L.	SD50	Global Core Plasma Model. For publication in Journal	
Investigations of Remote Plasma Irregularities by Radio		of Geophysical Research, 1999.	
Sounding: Applications of the Radio Plasma Imager on		GALLAGHER, D.L.	SD50
IMAGE. For publication in Space Science Reviews,		CRAVEN, P.D.	SD50
1999.		COMFORT, R.H.	SD50
GAINES, J.	ED19	Global Core Plasma Model. For presentation at	
JOHNSTON, N.	ED19	American Geophysical Union 1999 Fall Meeting, San	
Position Estimation Verification Testing for the Video		Francisco, CA, December 13, 1999.	
Guidance Sensor and Dynamic Overhead Target		GALLAGHER, D.L.	SD50
Simulator. For publication in International Journal of		VAISBERG, O.L.	SD50
Agile Manufacturing, Robotics Edition, 1999.		COFFEY, V.N.	SD50
GALLAGHER, D.L.	ES83	PC–5 Waves and Low Energy Plasma in the Outer	
CRAVEN, P.D.	ES83	Magnetosphere. For presentation at American	
HAJI, G.	ES83	Geophysical Union 1999 Fall Meeting, San Francisco,	
Modeling the Plasmasphere. For presentation at Sixth		CA, December 13, 1999.	
Huntsville Modeling Workshop, Guntersville, AL,		GARCIA, R.	TD64
October 26–30, 1998.		GRIFFIN, L.W.	TD64
GALLAGHER, D.L.	ES83	WANG, T.-S.	TD64
Modeling the Plasmasphere. For presentation at		Overview of Fluid Dynamics Activities at the Marshall	
Colloquium/Meeting With the Russian Space Research		Space Flight Center. For presentation at Tenth Thermal	
Institute (IKI), Moscow, Russia, January 14, 1998.		and Fluids Analysis Workshop, Huntsville, AL,	
GALLAGHER, D.L.	ES83	September 13–17, 1999.	
GREEN, J.L.	GSFC	GARY, G.A.	ES82
FUNG, S.F.	GSFC	ALEXANDER, D.A.	ES82
BENSON, R.F.	GSFC		

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- Rendering Three-Dimensional Solar Coronal Structures of Active Region 8227. For presentation at American Astronomical Society, Chicago, IL, May 30–June 3, 1999.
- GEARHART, R.B. ES84  
CRAIG, A. ES84  
WHEELER, J. ES84  
SWARTZ, D.A. ES84  
Carbon Monoxide Formation in SN 1987A. For publication in *Astrophysical Journal*, Chicago, IL, 1999.
- GEERTS, B. SD60  
HEYMSFIELD, G.M. SD60  
TIAN, L. SD60  
HALVERSON, J.B. SD60  
GUILLORY, A.R. SD60  
MEJIA, M.I. SD60  
Hurricane Georges' Landfall in the Dominican Republic: Detailed Airborne Doppler Radar Imagery. For publication in *Bulletin of American Meteorological Society*, July 1999.
- GERASIMENKO, L.M. Russian Academy of Sciences  
HOOVER, R.B. SD50  
ROZANOV, A.Y. Russian Academy of Sciences  
ZHEGALLO, E.A. Russian Academy of Sciences  
ZHMUR, S.I. Russian Academy of Sciences  
Bacterial Paleontology and Studies of Carbonaceous Chondrites. For publication in *Paleontological Journal*, Birmingham, AL, July 1999.
- GERMANY, G.A. UAH/CSPAR  
SWIFT, W. UAH  
CREUTZBERG, F.  
EASTES, R.  
RICH, F.  
SPANN, J.F., JR. ES83  
BRITTNACHER, M. University of Washington  
PARKS, G.K. University of Washington  
Auroral Boundaries: Comparison Between UV Images, In Situ Precipitation, and Groundbased Optical Observations. For presentation at 1998 American Geophysical Union Fall Meeting, San Francisco, CA, December 6–10, 1998.
- GERMANY, G.A. UAH/CSPAR  
RICHARDS, P.G. UAH  
SPANN, J.F., JR. ES83  
BRITTNACHER, M.J. University of Washington  
PARKS, G.K. University of Washington
- Issues in Quantitative Analysis of Ultraviolet Imager (UVI) Data: Airglow. For presentation at 1999 Spring AGU Meeting, Boston, MA, May 31–June 4, 1999.
- GERRISH, H.P., JR. TD40  
Antimatter Production for Near-Term Propulsion Applications. For presentation at 10th Annual NASA/JPL/MSFC/AIAA Workshop, Huntsville, AL, April 5–8, 1999.
- GHOSH, K.K. NSA/NRC  
RAMSEY, B.D. ES84  
SIVARAM, C. Indian Institute of Technology  
Correlation Between Radio-Millimeter and Gamma Ray Fluxes From Blazars. For presentation at 193rd Meeting of American Astronomical Society, Austin, TX, January 5–9, 1999.
- GHOSH, K.K. ES84  
RAMSEY, B.D. ES84  
AUSTIN, R.A. ES84  
SOUNDARARAJAPERUMAL, S. Indian Institute of Technology  
Imaging Polarimetry of Six X-Ray Selected Blazars. For publication in *Astronomical Society of the Pacific*, 1998/1999.
- GHOSH, K.K. NSA/NRC  
RAMSEY, B.D. ES82  
Origin of Gamma-Ray Emissions from the MeV Blazars. For publication in *Astroparticle Physics the Proceedings of 3rd INTEGRAL Workshop*, Taormina, Sicily, September 1998.
- GHOSH, K.K. NSA/NRC  
RAMSEY, B.D. ES84  
SOUNDARARAJAPERUMAL, S. Indian Institute of Technology  
PUKALENTHI, S. Indian Institute of Technology  
ROSARIO, M.J. Indian Institute of Technology  
Major Optical Outburst of Two Blazars: 3C66A and OJ287. For presentation at AAS Meeting #194, Chicago, IL, May 30–June 3, 1999.
- GHOSH, K.K. NSA/NRC  
RAMSEY, B.D. SD50  
SADUN, A.C.  
SOUNDARARAJAPERUMAL, S. Indian Institute of Technology  
Optical Variability of Blazars. For publication in *The Astrophysical Journal*, 1999.

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GIBLIN, T.	UAH	GILLIES, D.C.	ES75
VAN PARADIJS, J.	UAH	Materials Science Experiments on the <i>International Space Station</i> . For presentation at The Pittsburg Conference, Orlando, FL, March 7–12, 1999.	
KOUVELIOTOU, C.	USRA		
CONNAUGHTON, V.	NRC/MSFC		
WIJERS, R.A.M.J.	SUNY, NY		
FISHMAN, G.	ES42	GOODMAN, S.J.	HR20
Evidence for an Early High-Energy Afterglow Observed With BATSE From GRB980923. For publication in <i>Astrophysical Journal Letters</i> , 1999.		BUECHLER, D.E.	UAH
		HODANISH, S.	
		SHARP, D.	
		WILLIAMS, E.	
GIBSON, U.J.	ES75	BOLDI, B.	
HORRELL, E.	ES75	MATLIN, A.	
PUSEY, M.L.	ES75	WEBER, M.	
Buffer Effects in the Nucleation and Growth of Chicken Egg White Lysozyme. For presentation at American Crystallographic Association, Buffalo, NY, May 24, 1999.		Total Lightning Activity Associated With Tornadoic Storms. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.	
GILES, A.B.	SD50	GOODMAN, S.J.	SD60
GALLOWAY, D.K.	SD50	BUECHLER, D.E.	UAH
GREENHILL, J.G.	SD50	KNUPP, K.	UAH
STOREY, M.C.	SD50	DRISCOLL, K.	UAH
WILSON, C.A.	SD50	MCCAUL, E.W.	USRA
Pulse Profiles, Accretion Column Dips and a Flare in GX 1+4 During a Faint State. For publication in <i>Astrophysical Journal</i> , 1999.		The 1997-98 El Nino Event and Related Wintertime Lightning Variations in the Southeastern United States. For publication in <i>Geophysical Research Letters</i> , 1999.	
GILLIES, D.C.	ES75	GREEN, J.L.	GSFC
Flight- and Ground-Based Materials Science Programs at NASA. For presentation at 23rd Annual American Ceramic Society Meeting, Cocoa Beach, FL, January 25–29, 1999.		BENSON, R.F.	GSFC
		FUNG, S.F.	GSFC
		TAYLOR, W.W.L.	Raytheon
		BOARDSEN, S.A.	Raytheon
		REINISCH, B.W.	University of MA
GILLIES, D.C.	ES75	HAINES, D.M.	University of MA
ENGEL, H.P.	Wyle Laboratories	BIBL, K.	University of MA
Quantitative Computer Tomography for Determining Composition of Microgravity and Ground Based Solid Solutions. For presentation at 128th Annual Meeting TMS, San Diego, CA, February 28–March 4, 1999.		GALLAGHER, D.L.	SD50
		ET AL.	
		Radio Plasma Imager Simulations and Measurements. For publication in <i>Space Science Reviews</i> , 1999.	
GILLIES, D.C.	ES75	GREENE, C.	Boeing
MOTAKEF, S.	Cape Simulations Inc.	CLAFLIN, S.	Boeing
DUDLEY, M.	State University of New York	MADING, C.	DASA, Germany
MATYI, R.	University of Wisconsin-Madison	BUTAS, J.	TD53
VOLZ, H.	University of Wisconsin-Madison	Non-Toxic Orbital Maneuvering System Engine Development. For presentation at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Los Angeles, CA, June 20–24, 1999.	
Growth of II-VI Solid Solutions in the Presence of a Rotating Magnetic Field. For presentation at 128th Annual Meeting TMS, San Diego, CA, February 28–March 4, 1999.			
		GREGO, L.	California Institute of Technology
		CARLSTROM, J.E.	University of Chicago

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JOY, M.K.	ES84	HAGYARD, M.J.	ES82
REESE, E.D.	University of Chicago	ADAMS, M.L.	
HOLDER, G.P.	University of Chicago	SMITH, J.E.	
PATEL, S.	UAH	WEST, E.A.	
HOLZAPFEL, W.L.	University of Chicago	Effects of Faraday Rotation Observed in Filter	
COORAY, A.K.	University of Chicago	Magnetograph Data. For publication in Solar Physics,	
The Sunyaev-Zel'dovich Effect in Abell 370. For		1999.	
publication in Astrophysical Journal, Chicago, IL, 1999.			
GRIFFIN, L.W.	ED32	HAGYARD, M.J.	SD50
DORNEY, D.J.	Virginia Commonwealth	PEVTSOV, A.A.	
Simulations of the Unsteady Flow Through the Fastrac		Studies of Solar Helicity Using Vector Magnetograms.	
Supersonic Turbine. For presentation at ASME IGTI		For publication in Solar Physics, 1999.	
Turbo Expo, Indianapolis, IN, June 1999.			
GRIFFIN, L.W.	TD64	HALL, C.E.	ED13
HUDSON, S.T.	TD64	HODEL, A.S.	Auburn University
ZOLADZ, T.F.	TD64	HUNG, J.Y.	Auburn University
Overview of Current Turbine Aerodynamic Analysis		Variable Structure PID Control to Prevent Integrator	
and Testing at MSFC. For presentation at 1999 Thermal		Windup. For presentation at 31st Southeastern	
and Fluids Analysis Workshop, Huntsville, AL,		Symposium on System Theory (SSST 99), Auburn, AL,	
September 13–17, 1999.		March 21–23, 1999.	
GRINER, C.	DD01	HALL, C.E.	ED13
LYLES, G.M.	RA10	PANOSSIAN, H.V.	Boeing
Bantam—A Systematic Approach to Reusable Launch		X–33 Attitude Control Using the XRS-2200 Linear	
Vehicle Technology Development. For presentation at		Aerospike Engine. For presentation at 35th AIAA/	
IAF, Amsterdam, Netherlands, October 4–8, 1999.		ASME/SAE/ASEE Joint Propulsion Conference &	
		Exhibits, Los Angeles, CA, June 20–24, 1999.	
GUBAREV, M.	National Research Council	HAMAKER, J.W.	VS20
CISZAK, E.	SD50	The Faster, Better, Cheaper Approach to Space	
PONOMAREV, I.	X-Ray Optical Systems	Missions: An Engineering Management Assessment.	
GIBSON, W.M.	State University of NY	For presentation at AIAA Space Technology Conference	
JOY, M.K.	SD50	& Exposition, Albuquerque, NM, September 28–30,	
First Results From a Microfocus X-Ray System for		1999.	
Macromolecular Crystallography. For publication in			
Journal of Applied Crystallography, August 1999.			
GUFFIN, O.T.	PS01	HAMILTON, G.S.	EO66
AMES, G.H.	PS01	Engineering Registration—Why Bother? For	
Affordable Precursor Flight Experiment for Ultra		presentation at National Society of Black Engineers	
Lightweight Mirror Technologies. For presentation at		Region III Fall Conference, Lexington, KY, October	
AIAA Defense and Civil Space Programs Conference		30–November 1, 1998.	
& Exhibit, Huntsville, AL, October 29, 1998.			
GUILLORY, A.R.	HR20	HARMON, B.A.	ES84
HOOD, R.E.	HR20	Galactic Superluminal Sources. For publication in	
Observations of Hurricane Georges During the Third		Proceedings of 3rd INTEGRAL Workshop, Taormina,	
Convection and Moisture Experiment (CAMEX–3). For		Italy, 1999.	
presentation at 53rd Interdepartmental Hurricane			
Conference, Biloxi, MS, February 8–12, 1999.			
		HARMON, B.A.	ES84
		High Energy Properties of Galactic Superluminals. For	
		presentation at National Radio Astronomy Observatory	
		Colloquium, Socorro, NM, February 12, 1999.	

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HARMON, B.A.	ES84	of the SPIE 13th Annual International Symposium,	
FINGER, M.H.	ES84	Orlando, FL, April 5–9, 1999.	
MCCOLLOUGH, M.L.	USRA		
ZHANG, S.N.	UAH	HIGGINS, D.B.	SD42
PACIESAS, W.S.	UAH	JAYROE, R.R.	SD42
WILSON, C.A.	ES84	MCCARLEY, K.S.	SD42
XTE J1550–564. For publication in International Astronomical Union Circular No. 7098, Cambridge, MA, 1999.		Materials Science Experiment Module Accommodation Within the Materials Science Research Rack 1 (MSRR–1) on the <i>International Space Station (ISS)</i> . For presentation at TMS Minerals, Metals, Materials Society Meeting, Nashville, TN, March 12–16, 2000.	
HARMON, B.A.	ES84		
WILSON, C.A.	ES84		
FISHMAN, G.J.	ES84	HJELLMING, R.M.	
MCCOLLOUGH, M.L.	USRA	RUPEN, M.	
ROBINSON, C.R.	USRA	MIODUSZEWSKI, A.J.	
SAHI, M.	USRA	KUULKERS, E.	
PACIESAS, W.S.	UAH	MCCOLLOUGH, M.L.	USRA
ZHANG, S.N.	UAH	HARMON, B.A.	
Preview of the BATSE Earth Occultation Catalog of Low Energy Gamma Ray Sources. For presentation at 1999 Meeting of the AAS High Energy Astrophysics Division, Charleston, SC, April 12–15, 1999.		BUSTON, M.	
		SOOD, R.	
		TZIOUMIS, A.	
		Radio and X-Ray Observations of the 1998 Outburst of the Recurrent X-Ray Transient 4U 1630-47. For publication in <i>Astrophysical Journal</i> , Chicago, IL, 1999.	
HATHAWAY, D.H.	ES82		
WILSON, R.M.	ES82		
REICHMANN, E.J.	ES82	HOLMES, R.R.	SD42
A Survey and Synthesis of Solar Cycle Prediction Techniques. For publication in <i>Journal of Geophysical Research</i> , August 1, 1999.		ELLIS, D.	Glenn Research Center
		MCKECHNIE, T.	Plasma Processes Inc.
		HICKMAN, R.	Plasma Processes Inc.
		Microstructure and Mechanical Properties of Vacuum Plasma Sprayed Cu-8Cr-4Nb. For presentation at 10th JPL/MSFC/AIAA Advanced Propulsion Research Workshop, Huntsville, AL, April 5–9, 1999.	
HATHAWAY, D.H.	SD50		
The Photospheric Convection Spectrum. For presentation at 9th SOHO Workshop, Stanford, CA, July 12, 1999.			
HATHAWAY, D.H.	SD50	HOLMES, R.R.	EJ71
Solar Cycle Predictions. For presentation at American Geophysical Union 1999 Fall Meeting, San Francisco, CA, December 15, 1999.		ELLIS, D.	LeRC
		MCKECHNIE, T.	Plasma Processes Inc.
		Robust Low Cost Aerospike/RLV Combustion Chamber by Advanced Vacuum Plasma Process. For presentation at 36th Space Conference, Cape Canaveral, FL, April 27–30, 1999.	
HENDRIX, T.D.	Auburn University		
SCHNEIDER, M.P.	FD41		
NASA'S TReK Project: A Case Study in Using the Spiral Model of Software Development. For publication in <i>Communications of the Association of Computing Machinery (ACM) Journal</i> , 1999.		HOLT, J.M.	ED25
		CLANTON, S.E.	Sverdrup
		Analytical Assessment of a Gross Leakage Event Within the <i>International Space Station (ISS)</i> Node 2 Internal Active Thermal Control System (IATCS). For presentation at Tenth Thermal & Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.	
HERREN, K.A.	EB52		
GREGORY, D.A.	UAH		
The Calculation of Fractal Dimension in the Presence of Non-Fractal Clutter. For publication in <i>Proceedings</i>			



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HOOD, R.E.	HR20	HUETER, U.	TD15
KAKAR, R.		TURNER, J.	TD15
Overview of the Third Convection and Moisture Experiment (CAMEX-3). For presentation at 23rd AMS Conference on Hurricanes & Tropical Meteorology, Dallas, TX, January 9–15, 1999.		Rocket-Based Combined Cycle Activities in the Advanced Space Transportation Program Office. For presentation at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Los Angeles, CA, June 20–24, 1999.	
HORACK, J.M.	ES01		
TREISE, D.	University of Florida	HUTCHENS, C.F.	FD21
The Process of Science Communications at NASA/Marshall Space Flight Center. For presentation at The New Millennium Magnetosphere Conference, Guntersville, AL, October 27, 1998.		LONG, D.A.	FD21
		Vapor Compression Distillation Urine Processor Lessons Learned from Development and Life Testing. For presentation at 29th International Conference on Environmental Systems, Denver, CO, July 12–15, 1999.	
HOUTS, M.G.	EP63		
SCHMIDT, G.R.	EP63	HUTCHINSON, S.L.	EO66
GERRISH, H.P.	EP63	ALVES, J.R.	Sigmatex, Inc.
MARTIN, J.J.	EP63	Using Virtual Simulations in the Design of the 21st Century Space Science Environments. For presentation at National Society of Black Engineers Technical Professional Conference, Kansas City, MO, March 24–28, 1999.	
Space Transportation Options for the 21st Century. For presentation at 36th Space Conference, Cape Canaveral, FL, April 27–30, 1999.			
HOUTS, M.G.	EP63		
Space Transportation Options for the 21st Century. For presentation at 35th AIAA Conference, Los Angeles, CA, June 20–23, 1999.		HYERS, R.W.	ES75
		ABEDIAN, B.	Tufts University
		RACZ, L.M.	Tufts University
		TRAPAGA, G.	MIT
HOWARD, R.T.	EB44	Transition to Turbulence in an Electromagnetically-Levitated Droplet. For publication in Journal Science, 1998/1999.	
BRYAN, T.C.	EB44		
BOOK, M.L.	EB44		
DABNEY, R.W.	EB44	HYERS, R.W.	ES75
The Video Guidance Sensor—A Flight Proven Technology. For presentation at 22nd Annual American Aeronautical Society (AAS) Guidance & Control Conference, Breckenridge, CO, February 3–7, 1999.		TRAPAGA, G.	MIT
		FLEMINGS, M.C.	MIT
		Surface Tension and Viscosity Measurements in Microgravity: Some Results and Fluid Flow Observations During MSL–1. For publication in Proceedings of 11th International Symposium on Microorganisms Materials Science, San Diego, CA, February 14, 1999.	
HOWARD, R.T.	EB44		
BRYAN, T.C.	EB44		
BOOK, M.L.	EB44		
On-Orbit Testing of the Video Guidance Sensor. For presentation at SPIE's AeroSense 1999 Symposium, Orlando, FL, April 6–9, 1999.		IVANIOUCHENKOV, Y.	Coimbra University
		FORTE, P.	Coimbra University
HUETER, U.	RA10	PESKOV, V.	ES84
TURNER, J.	EE61	RAMSEY, B.D.	ES84
Rocket-Based Combined Cycle Activities in the Advanced Space Transportation Program Office. For presentation at JANNAF Interagency Propulsion Committee, Tucson, AZ, December 7–11, 1998.		Breakdown Limit Studies in High-Rate Gaseous Detectors. For publication in Nuclear Instruments & Methods in Physics Research A 422, 1999.	
		JACKSON, J.L.	Micro Craft, Inc.
		COLE, H.J.	EB52
		HOWARD, R.T.	EB44

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- Video Guidance Sensor—Optical Performance Predictions and Results From STS-95 Experiment. For presentation at SPIE Aerosense Conference, Orlando, FL, April 5-9, 1999. For publication in Proceedings of SPIE Aerosense Conference, Vol. No. 3707, Orlando, FL, April 5-9, 1999.
- JACOBSON, D.N. SD70  
Development of Lightweight Mirror Technology for the NGST Program. For presentation at SPIE Conference "The International Symposium on Optical Science, Engineering and Instrumentation," Denver, CO, July 18-23, 1999.
- JARZEMBSKI, M.A. HR20  
SRIVASTAVA, V. USRA  
Interference of Backscatter From Two Droplets in a Focused Continuous Wave CO2 Doppler Lidar Beam. For publication in Applied Optics: Lasers, Photonics and Environmental Optics, 1998.
- JARZEMBSKI, M.A. H20  
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- JARZEMBSKI, M.A. HR20  
SRIVASTAVA, V. USRA  
ROTHERMEL, J. HR20  
Aerosol Backscatter From Airborne Continuous Wave CO2 Lidars Over Western North America and the Pacific Ocean. For presentation at Tenth Biennial Coherent Laser Radar Technology & Applications Conference, Mt. Hood, OR, June 28, 1999.
- JARZEMBSKI, M.A. HR20  
SRIVASTAVA, V. USRA  
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- JARZEMBSKI, M.A. HR20  
PUESCHEL, R.F. Ames  
SRIVASTAVA, V. USRA  
MCCAUL, E.W., JR. USRA
- CUTTEN, D.R. UAH  
JEDLOVEC, G.J. HR20  
ATKINSON, R.J. Lockheed Martin  
Comparison of CO2 Lidar Backscatter with Particle Size Distribution and GOES-7 Data in Hurricane Juliette. For presentation at Tenth Biennial Coherent Laser Radar Technology & Application, Mt. Hood, OR, June 28, 1999.
- JEDLOVEC, G.J. HR20  
IWAI, H. UAH  
Variability of Upper-Tropospheric Precipitable Water From Satellite and Modal Reanalysis Datasets. For presentation at 14th Conference on Hydrology, Dallas, TX, January 10-15, 1999.
- JEDLOVEC, G.J. SD60  
LERNER, J.A. Karl-Franzens University  
Water Vapor Winds and Their Application to Climate Change Studies. For presentation at 10th Conference of Satellite Meteorology & Oceanography, Long Beach, CA, January 10-14, 2000.
- JEDLOVEC, G.J. SD60  
HAINES, S.L. UAH  
Comparison of Daily Total Precipitable Water From Satellite and Model Reanalysis Fields. For presentation at 10th Conference of Satellite Meteorology & Oceanography, Long Beach, CA, January 10-14, 2000.
- JEKER, D.P. Swiss Federal Institute  
PFISTER, L. Ames  
BRUNNER, D. Royal Netherlands  
BOCCIPPIO, D.J. HR20  
PICKERING, K.E. University of Maryland  
THOMPSON, A.M. Goddard  
WERNLI, H. Swiss Federal Institute  
SELKIRK, R.B. Ames  
KONDO, Y. Nagoya University  
ET AL.  
Nitrogen Oxides and Ozone from B-747 Measurements (NOXAR) During POLINAT-2 and SONEX—Overview and Case Studies on Continental and Marien Convection. For publication in Journal of Geophysical Research (Atmosphere) on the POLINAT-2 and SONEX Missions, 1999.
- JENKINS, A.A. Ion Corp.  
ROMAN, M.C. ED60  
Portable Fan Assembly for the *International Space Station*. For presentation at 29th International

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Conference on Environmental Systems, Denver, Co, July 1999.	JOY, M.K.	SD50
	Distance Estimates for High Redshift Clusters SZ and X-ray Measurements. For presentation at American Astronomical Society Meeting #194, Chicago, IL, May 30–June 4, 1999.	
JOHNSON, C.L.	RA10	
LEIFER, S.	RA10	
Interstellar Exploration: Propulsion Options for Precursors and Beyond. For presentation at IAF, Amsterdam, Netherlands, October 4–8, 1999.	JUDGE, R.A.	ES76
	SNELL, E.H.	ES76
	A Few Good Crystals Please. For presentation at ACA Annual Meeting, Buffalo, NY, May 22, 1999.	
JOHNSON, C.L.	RA10	
ESTES, R.D.	Smithsonian	
LORENZINI, E.	Smithsonian	
MARTINEZ-SANCHEZ, M.	MIT	
SANMARTIN, J.	University of Madrid	
The Propulsive Small Expendable Deployer System Experiment. For publication in Journal of Spacecraft & Rockets, December 1999.	KAISER, N.	UAH
	CROELL, A.	UAH
	SZOFRAN, F.R.	ES75
	COBB, S.D.	ES75
	DOLD, P.	Universitat Freiburg
	BENZ, K.W.	Universitat Freiburg
	Determination of the Wetting Angle of Germanium and Germanium-Silicon Melt on Different Substrate Materials. For presentation at ACCGE–11 Conference, Tucson, AZ, August 1–6, 1999.	
JOHNSON, C.L.	TD15	
ESTES, R.	Harvard Smithsonian	
From the Rocket Equation to Maxwell's Equations: Electrodynamic Tether Propulsion Nears Space Test. For publication in IEEE Spectrum, 1999.	KAMENETZKY, R.R.	EH12
	FINCKENOR, M.M.	EH12
	VAUGHN, J.A.	EH12
JOHNSON, D.L.	EL23	
VAUGHAN, W.W.	UAH	
Lightning Characteristics and Lightning Strike Peak Current Probabilities as Related to Aerospace Vehicle Operations. For presentation at Eighth Conference on Aviation, Range, and Aerospace Meteorology, Dallas, TX, January 10–15, 1999.	Space Environmental Effects on Colored Coatings and Anodizes. For presentation at 44th International SAMPE Symposium, Long Beach, CA, May 23–27, 1999.	
	KAMENETZKY, R.R.	ED31
	FINCKENOR, M.M.	ED31
	MSFC Investigations of Beta Cloth Darkening Due to Ultraviolet Radiation Interactions. For presentation at AIAA Aerospace Sciences Conference, Reno, NV, January 10–13, 2000.	
JOHNSON, L.	TD15	
CURTIS, L.	TD15	
BALLANCE, J.	TD15	
ESTES, R.	Smithsonian	
LORENZINI, E.	Smithsonian	
GILCHRIST, B.	University of Michigan	
Propulsive Small Expendable Deployer System (ProSEDS) Experiment. For presentation at 10th Advanced Propulsion Workshop, Huntsville, AL, April 5–8, 1999. For publication in Proceedings of 10th Advanced Propulsion Workshop, Huntsville, AL, April 5–8, 1999.	KAMENETZKY, R.R.	ED31
	FINCKENOR, M.M.	ED31
	VAUGHN, J.A.	ED31
	EDWARDS, D.L.	ED31
	NOLEN, A.	ED31
	BURNS, H.D.	ED31
	Space Environmental Effects Testing in Support of the <i>International Space Station</i> . For presentation at AIAA Aerospace Sciences Conference, Reno, NV, January 10– 13, 2000.	
JONES, M.R.	University of Arizona	
FARMER, J.T.	ED25	
BREEDING, S.P.	Tec-Masters, Inc.	
Evaluation of the Use of Optical Fiber Thermometers for Thermal Control of the Quench Module Insert. For presentation at Tenth Thermal & Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.	KATZ, I.	Maxwell Technologies
	DAVIS, V.A.	Maxwell Technologies
	MANDELL, M.J.	Maxwell Technologies
	GARDNER, B.M.	Maxwell Technologies



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HILTON, J.M.	Maxwell Technologies	Summary of Rocketdyne Engine A5 Rocket Based Combined Cycle Testing. For presentation at Propulsion Engineering Research Center at MSFC, Huntsville, AL, October 26, 1998.
MINOR, J.	ED03	
FREDRICKSON, A.R.	Jet Propulsion	
COOKE, D.L.	Air Force Research	
Interactive Spacecraft Charging Interactive Handbook with Integrated, Updated Spacecraft Charging Models. For presentation at AIAA Space Technology Conference & Exposition, Albuquerque, NM, September 28–30, 1999. For publication in Proceedings of AIAA Space Technology Conference & Exposition, Albuquerque, NM, September 28–30, 1999.		
KAUFFMAN, W.J.	EL23	KEYS, A.S. EB52
HARDAGE, D.M.	EL23	FORK, R.L. UAH
Enabling Radiation Tolerant Systems for Space. For presentation at Space Technology & Applications International Forum (STAIF-99), Albuquerque, NM, January 31–February 4, 1999.		NELSON, T.R. Air Force Research Lab
		LOEHR, J.P. Air Force Research Lab
		Resonant Transmissive Modulator Construction for Use in Beam Steering Array. For presentation at International Society for Optical Engineering (SPIE) Annual Meeting, Denver, CO, July 18–23, 1999.
		KHAZANOV, G.V. University of Alaska
		KRIVORUTSKY, E.N. University of Alaska
		GALLAGHER, D.L. SD50
		Whistler Solitons in Plasma with Anisotropic Hot Electron Admixture. For publication in Plasma Physics, 1999.
KAUKLER, W.F.	UAH	
CURRERI, P.A.	ES75	KOCZOR, R.J. ES01
In-Situ X-Ray Microscopy of Phase and Composition Distributions in Metal Alloys During Solidification. For presentation at SPIE Conference, Denver, CO, July 18, 1999.		NOEVER, D.A. ES01
		HISER, R. ES01
		Processing of Bulk YBa <sub>2</sub> Cu <sub>3</sub> O <sub>7-x</sub> High Temperature Superconductor Materials for Gravity Modification Experiments and Performance Under AC Levitation. For presentation at AIAA/ASME/ASEE Joint Propulsion Conference & Exhibit, Los Angeles, CA, June 1999.
KAVAYA, M.J.	HR20	
Pre-Launch End-to-End Testing Plans for the SPARCLE. For presentation at Coherent Laser Radar Technology & Applications Conference, Mount Hood, OR, June 28–July 2, 1999.		KOCZOR, R.J. ES01
		NOEVER, D.A. ES01
		ROBERTSON, G.A. ES01
KAVAYA, M.J.	HR20	Fabrication of Large YBCO Superconducting Disks. For publication in Physica C, 1999.
The NASA Coherent Lidar Technology Advisory Team. For presentation at Coherent Laser Radar Technology and Applications Conference, Mount Hood, OR, June 28–July 2, 1999.		
		KOŁODZIEJCZAK, J.J. SD50
		JOY M.K. SD50
KAVAYA, M.J.	HR20	RUSSELL, C.H.
SINGH, U.N.	LARC	GISON, W.M.
Coherent Doppler Wind Lidar Technology for Space-Based Wind Measurements Including SPARCLE. For presentation at Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference, Baltimore, MD, May 23–28, 1999.		GUBAREV, M.V.
		Hard X-Ray Measurements of Polycapillary Optics for Astronomy. For presentation at SPIE's X-ray Optics, Instruments, and Missions II Symposium, Denver, CO, July 18–23, 1999. For publication in Proceedings of SPIE's X-Ray Optics, Instruments, and Missions II Symposium, Denver, CO, July 18–23, 1999.
KETCHUM, A.	Boeing	
EMANUEL, M.	Boeing	KOMMERS, J.M. MIT
CRAMER, J.	EP62	LEWIN, W.H.G. MIT

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KOUVELIOTOU, C.	USRA/ES84	HALL, J.M.	Computer Science Corp.
VAN PARADIJS, J.	UAH	SOLAKIEWICZ, R.J.	Chicago State University
PENDLETON, G.N.	ES84	Laboratory Calibration of the Optical Transient Detector	
MEEGAN, C.A.	ES84	(OTD) and the Lightning Imaging Sensor (LIS). For	
FISHMAN, G.J.	ES84	publication in Journal of Atmospheric and Oceanic	
A Non-Triggered Burst Supplement to the BATSE		Technology, 1999.	
Gamma-Ray Burst Catalogs. For publication in		KOZYRA, J.U.	
Astrophysical Journal Supplement Series, 1999.		SONG, P.	
KOS, L.D.	PD31	CHANDLER, M.O.	ES83
Human Mars Mission: Transport Assessment. For		RUSSELL, C.T.	
presentation at AIAA Defense & Civil Space Programs		STAHARA, S.S.	
Conference & Exhibit, Huntsville, AL, October 26,		SPREITER, J.R.	
1998.		SHUE, J.-H.	
		POLAR Magnetosheath Observations on May 4, 1998.	
KOSHAK, W.J.	HR20	For presentation at American Geophysical Union (AGU)	
SOLAKIEWICZ, R.J.	HR20	Spring Meeting, Boston, MA, June 2, 1999.	
Electro-Optic Lightning Detector. For publication in		KROES, R.L.	ES76
Journal of Applied Optics, 1998.		Biotechnology Science Experiments on Mir. For	
KOSHAK, W.J.	HR20	presentation at AIAA 13th Annual Microgravity Science	
A Spherical Earth Solution for TOA Lightning Location		& Space Processing Symposium, Reno, NV, January	
Retrieval. For presentation at 11th International		11–14, 1999.	
Conference on Atmospheric Electricity, Guntersville,		KROES, R.L.	ES76
AL, June 7–11, 1999.		Material Science Experiments on Mir. For presentation	
KOSHAK, W.J.	HR20	at AIAA 13th Annual Microgravity Science & Space	
SOLAKIEWICZ, R.J.	Chicago State University	Processing Symposium, Reno, NV, January 11–14,	
Electro-optic Lightning Detector. For publication in		1999.	
Applied Optics, Washington, DC, 1999.		KROME, M.E.	ED44
KOSHAK, W.J.	HR20	CLARK, T.L.	ED44
BLAKESLEE, R.J.	HR20	RF Bonding Investigation: The Effects of a Space	
BAILEY, J.C.	Raytheon STX	Environment on Coatings. For presentation at IEEE	
ALDF Data Retrieval Algorithms for Validating the		Electromagnetic Compatibility Symposium, Seattle,	
Optical Transient Detector (OTD) and the Lightning		WA, August 2–6, 1999.	
Imaging Sensor (LIS). For publication in Remote		KRUPP, D.	ED13
Sensing Laboratory, University of Minnesota, 1999.		SHTESSEL, Y.B.	UAH
KOSHAK, W.J.	HR20	Chattering-Free Sliding Mode Control With Unmodeled	
CHRISTIAN, H.J.	HR20	Dynamics. For presentation at 1999 American Control	
KRIDER, E.P.	University of Arizona	Conference, San Diego, CA, June 2–4, 1999.	
A LIS Validation Study at the KSC-ER Using LDAR		KUNDROT, C.E.	ES76
and Field Mill Data. For presentation at Spring 1999		NASA's Biological Crystal Growth Program on the	
American Geophysical Union Meeting, Boston, MA,		<i>International Space Station</i> . For presentation at 18th	
May 1999.		IUCR General Assembly and Congress, Glasgow,	
KOSHAK, W.J.	HR20	Scotland, August 7, 1999.	
STEWART, M.F.	UAH	KURT, V.G.	
CHRISTIAN, H.J.	HR20	AKIMOV, V.V.	
BERGSTROM, J.W.	Ball Aerospace		

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HAGYARD, M.J.	ES82	LEE, J.A.	EH23
HATHAWAY, D.H.	ES82	Friction Stir Welding of SIC/Aluminum Metal Matrix Composites. For presentation at 23rd Annual Conference on Composites, Materials & Structures, Cocoa Beach, FL, January 25–29, 1999.	
Multi-Wavelength Analysis of the March 26, 1991 Solar Flare. For presentation at High Energy Solar Physics Workshop Anticipating HESSI, Goddard Space Flight Center, Greenbelt, MD, October 18–20, 1999.			
LAK, T.	Boeing	LEE, J.A.	EH23
FLACHBART, R.	EP63	PALEY, M.S.	ES76/USRA
NGUYEN, H.	Boeing	Observation of Individual Fluorine Atom From Highly Oriented Poly (Tetrafluoroethylene) Films by Atomic Force Microscopy. For publication in Journal of Macromolecules, 1999.	
MARTIN, J.J.	EP63		
Testing of a Spray-Bar Zero Gravity Cryogenic Vent System for Upper Stages. For presentation at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Los Angeles, CA, June 20–24, 1999.		LEYDERMAN, A.	University of Puerto Rico
LAKIN, D.R., II	ED13	PENN, B.G.	ES76
SINGH, A.D.	Auburn University	Electro-Optical Effects in Thin Organic Films. For publication in Journal of Applied Physics, 1998.	
Exploiting Defect Clustering to Screen Bare Die for Infant Mortality Failures: An Experimental Study. For presentation at IEEE International Test Conference, Atlantic City, NJ, September 28–30, 1999.		LIGGIN, K.	ED13
LAPENTA, W.M.	HR20	CLARK, P.	ED13
SUGGS, R.J.	HR20	Development of a COTS Mass Storage Unit for the Space Readiness Coherent Lidar Experiment. For presentation at 18th AIAA Digital Avionics Systems Conference, St. Louis, MO, October 23–29, 1999.	
JEDLOVEC, G.	HR20	LITCHFORD, F.J.	EP63
MCNIDER, R.T.	UAH	THOMPSON, B.R.	ERC Inc.
Real-Time Assimilation of GOES-Derived Products into a Mesoscale Model and Its Impact on Short-Term (06–36 hr) Forecasts from 17 October 1998 through the Present. For presentation at 1st USWRP Science Symposium, Boulder, CO, March 29–31, 1999.		LINEBERRY, J.T.	ERC Inc.
		Towards Integrated Pulse Detonation Propulsion and MHD Power. For presentation at 30th AIAA Plasmadynamics and Lasers Conference, Norfolk, VA, June 28–July 1, 1999.	
LAPENTA, W.M.	SD60	LITCHFORD, R.	TD40
SUGGS, R.J.	SD60	ROBERTSON, T.	TD40
JEDLOVEC, G.	SD60	HAWK, C.	UAH
MCNIDER, R.T.	UAH	TURNER, M.	UAH
Impact of Assimilating GOES-Derived Land Surface Variables into the PSU/NCAR MM5. For presentation at MM5 Land Surface Modeling Workshop, Boulder, CO, June 21–25, 1999.		KOELFGEN, S.	UAH
		Magnetic Flux Compression Using Detonation Plasma Armatures and Superconductor Stators: Integrated Propulsion & Power Applications. For presentation at 10th NASA/JPL/MSFC/AIAA Advanced Space Propulsion Workshop, Huntsville, AL, April 5–8, 1999.	
LAPENTA, W.M.	GHCC	LONDON, J.R., III	RA30
SUGGS, R.J.	GHCC	CREECH, S.D.	RA30
MCNIDER, R.	UAH	X–34 Program Status. For presentation at AIAA Defense & Civil Space Programs Conference & Exhibit, Huntsville, AL, October 28–30, 1998.	
JEDLOVEC, G.J.	SD60		
DEMBEK, S.	USRA		
Operational Assimilation of GOES Data into a Mesoscale Model. For presentation at 10th Conference of Satellite Meteorology & Oceanography, Long Beach, CA, January 10–14, 2000.			

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LU, H.-I.	SD60	Integrating Partial Polarization into a Metal-Ferroelectric-Semiconductor Field Effect Transistor Model. For presentation at 11th International Symposium on Integrated Ferroelectrics, Colorado Springs, CO, March 7, 1999.
ROBERTSON, F.R.	SD60	
Solving the Linear Balance Equation on the Globe as a Generalized Inverse Problem. For publication in Tellus, 1999.		
LU, H.-I.	SD60	MALONE, C.C. USRA
ROBERTSON, F.R.	HR20	CISZAK, E. USRA
On the Linearly-Balanced Kinetic Energy Spectrum. For presentation at 12th Conference on Atmospheric and Oceanic Fluid Dynamics, New York, NY, June 7–11, 1999.		KARR, L.J. SD48
		Characterization of Human Bone Alkaline Phosphatase in <i>Pichia Pastoris</i> . For presentation at Union of Crystallography Conference, Glasgow, Scotland, August 6, 1999.
LUMMERZHEIM, D.	University of Alaska	
SPANN, J.F., JR.	ES83	MAZURUK, K. USRA
PARKS, G.	University of Washington	RAMACHANDRAN, N. USRA
Global Imaging Mission. For presentation at Huntsville 98 Meeting, Guntersville, AL, October 29, 1998.		VOLZ, M.P. ES75
		Control of Meridional Flow in Circular Cylinders by a Travelling Axial Magnetic Field. For presentation at AIAA Meeting, Reno, NV, January 11–14, 1999.
LUVALL, J.C.	HR20	
QUATTROCHI, D.A.	HR20	
RICKMAN, D.L.	HR20	MAZURUK, K. ES75
Measuring Thermal Characteristics of Urban Landscapes. For presentation at 1999 AAG Annual Meeting, Honolulu, HI, March 23, 1999.		GILLIES, D.C. ES75
		VOLZ, M.P. ES75
		Magnetic Field Effect on the Stability of Flow Induced by a Rotating Magnetic Field. For publication in International Journal of Heat and Mass Transfer, 1999.
LYLES, G.M.	RA10	
Technology Maturity Towards Highly Reusable Space Transportation Goals. For presentation at IAF, Amsterdam, Netherlands, October 4–8, 1999.		MAZURUK, K. ES75
		VOLZ, M.P. ES75
		GILLIES, D.C. ES75
		Magnetic Field Effect on the Stability of Flow Induced by a Rotating Magnetic Field. For publication in Journal of Magnetohydrodynamics, Republic of Latvia, 1999.
MACH, D.M.	HR20	
BOECK, W.L.	HR20	
CHRISTIAN, H.J.	HR20	
The Unit of Lightning. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.		MCCAUL, E.W., JR. HR20
		BUECHLER, D. HR20
		GOODMAN, S.J. HR20
		Cloud-to-Ground Lightning Characteristics of a Major Tropical Cyclone. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.
MACKERRAS, D.	University of Queensland	
DARVENIZA, M.	University of Queensland	
ORVILLE, R.E.	University of Queensland	
WILLIAMS, E.R.	University of Queensland	
GOODMAN, S.J.	HR20	
Simulation of the Universal-Time Diurnal Variation of the Global Electric Circuit Charging Rate. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7–11, 1999.		MCCLURE, J.C. University of Texas, El Paso
		NUNES, A.C. EH23
		EVANS, D.M. University of Texas, El Paso
		Arc and Melting Efficiency of Plasma Arc Welds. For presentation at ASM Materials Solutions Conference, Cincinnati, OH, November 1–4, 1999.
MACLEOD, T.C.	ES93	
HO, F.D.	UAH	

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MCCOLLOUGH, M.L.	USRA	LAMPTON, M.	
ROBINSON, C.R.	USRA	GELLER, S.P.	
ZHANG, S.N.	USRA	HABRAKEN, S.	
HARMON, B.A.	ES84	RENOTTE, E.	
PACIESAS, W.S.	UAH	JAMAR, C.	
DIETERS, S.	UAH	SPANN, J.F., JR.	SD50
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		Measuring Tropospheric Winds From Space Using a	
MCCOLLOUGH, M.L.	USRA/SD50	Coherent Doppler Lidar Technique. For presentation at	
HARMON, B.A.	SD50	50th International Astronautical Congress, Amsterdam,	
DIETERS, S.S.	UAH	The Netherlands, October 4-8, 1999.	
WIJNANDS, R.	University of Amsterdam		
4U 1630-47. For publication in International		MINOR, J.	ED03
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Cambridge, MA, 1999.		Overview of NASA's Space Environments & Effects	
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MCCOLLUM, M.B.	ED44	Technology Conference, Albuquerque, New Mexico,	
CLARK, T.L.	ED44	September 28-30, 1999.	
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Unintentionally Generated RF Fields. For presentation		MITROFANOV, I.G.	
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6, 1999.		SANIN, A.B.	
		SAEVICH, Y.Y.	
MCPHERSON, J.W.	Hernandez Engineering	BRIGGS, M.S.	UAH/SD50
HARAWAY, S.W.	Hernandez Engineering	PACIESAS, W.S.	UAH
WHIRLEY, J.D.	CR10	FISHMAN, G.J.	SD50
Using the World Wide Web for GIDEP Problem Data		MEEGAN, C.A.	SD50
Processing at Marshall Space Flight Center. For		ET AL.	
presentation at 36th Annual Government-Industry Data		The Emission Time of Gamma-Ray Bursts. For	
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MEEGAN, C.A.	ES84	MIXSON, C.D.	FD33
PENDLETON, G.N.	ES84	Operations Methodology for the <i>International Space</i>	
MALLOZZI, R.S.	ES84	<i>Station (ISS)</i> High Rate Communications Outage	
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presentation at 1999 Meeting of the AAS High Energy		Technology & Applications International Forum	
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MENDE, S.B.	University of CA-Berkeley	MOHAMADINEJAD, H.	Boeing
HEETDERKS, H.		KNOX, J.C.	FD21
FREY, H.U.	University of CA-Berkeley	SMITH, J.E.	UAH



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		COLE, S.	UAH
		JONES, D.K.	UAH
		KEYS, A.S.	EB51
		Electrically-Tunable Group Delays Using Quantum Wells in a Distributed Bragg Reflector. For presentation at AeroSense '99, Orlando, FL, April 5–9, 1999.	
MOORE, R.L.	ES82		
FALCONER, D.A.	ES82		
PORTER, J.G.	ES82		
SUESS, S.T.	ES82	NESMAN, T.E.	TD63
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		Fastrac Gas Generator Testing. For presentation at Tenth Thermal & Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.	
MOORE, R.L.	SD50	NEWTON, E.K.	ES82
FALCONER, D.A.	SD50	MILLER, J.A.	ES82
PORTER, J.G.	SD50	Anticipating HESSI's View of Spectral Evolution in Flare Hard X-Ray Emission. For presentation at HESSI Workshop, Goddard Space Flight Center, Greenbelt, MD, October 19, 1999.	
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MULLINS, L.D.	ED13	NEWTON, E.K.	ES82
STONE, R.L.	ED13	GIBLIN, T.	UAH
EVANS, S.W.	ED13	The Observed Spectral Evolution of Solar Flare Hard X-Ray Emission. For presentation at AAS/SPD Meeting, Chicago, IL, June 3, 1999.	
Mission Planning for the CHANDRA X-Ray Observatory. For presentation at AAS/AIAA Astrodynamics Specialist Conference, Girdwood, AK, August 16–19, 1999.			
NADARAJAH, A.	ED76	NICHOLAS, D.P.	EB13
LI, H.	ES76	Analysis of Transistor Punchthrough Failures. For presentation at Alabama Imaging and Microscopy Society Meeting, Birmingham, AL, April 29–30, 1999.	
PUSEY, M.L.	ES76	NIX, M.B.	TD31
Determining the Molecular Growth Mechanisms of Protein Crystal Faces by Atomic Force Microscopy. For presentation at American Crystallographic Association, Buffalo, NY, May 24, 1999.		ESCHER, W.J.D.	SAIC
		Spaceliner Class Operability Gains Via Combined Airbreathing/Rocket Propulsion: Summarizing an Operational Assessment of Highly Reusable Space Transports. For presentation at 35th AIAA/ASAE/SAE Joint Propulsion Conference, Los Angeles, CA, June 20–24, 1999.	
NADLER, J.	TD40		
Inertial-Electrostatic Confinement (IEC) Fusion for Space Propulsion. For presentation at ASE Summer Faculty Fellow Program, The University of Alabama, Huntsville, AL, August 1999.		NOEVER, D.	SD01
		PHILLIPS, T.	SD43
		HORACK, J.M.	SD01
NAFTEL, J.C.	TD13	PORTER, L.	SD23
X–33, Stepping Stone to Low Cost Access to Space. For presentation at International Space University, Nakhon Ratchasima, Thailand, August 9–14, 1999.		MYSZKA, E.	CSC Corporation
		Leonid's Particle Analyses from Stratospheric Balloon Collection on Xerogel Surfaces. For presentation at Leonid's Meteor International Conference, Santa Clara, CA, April 12, 1999.	
NELSON, T.R., JR.	Air Force Research Lab		
LOEHR, J.P.	Air Force Research Lab		



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NOEVER, D.	ES76	NOEVER, D.A.	SD01
BREMNER, C.		PHILLIPS, J.A.	BishopWebWorks
Large-Scale Sakharov Condition. For presentation at 35th AIAA Joint Propulsion Conference, Los Angeles, CA, June 21, 1999.		HORACK, J.M.	SD01
		JERMAN, G.A.	SD01
		MYSZKA, E.	CSC Corporation
		An ET Origin for Stratospheric Particles Collected During the 1998 Leonids Meteor Shower. For publication in ICARUS, 1999.	
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PORTER, L.	ES76	STEWART, M.B.	University of Arkansas
JERMAN, G.	ES76	ADAMS, G.P.	University of Arkansas
Low-Density Silica Xerogel Capture of Leonids Meteor Storm Dust Candidates by Stratospheric Balloon Return. For presentation at Leonids Meteor International Conference, Santa Calara, CA, April 12, 1999.		ROMINE, P.	Alabama A&M University
		A Combined Experimental and Analytical Modeling Approach to Understanding Friction Stir Welding. For publication in Journal of Materials Processing & Manufacturing Science, 1998.	
NOEVER, D.	SD48		
BASKARAN, S.	Raytheon	NUNES, A.C., JR.	ED33
Darwinian Spacecraft. For presentation at JPL/MSFC/AIAA Advanced Propulsion Conference, Huntsville, AL, April 6, 1999.		RUSSELL, C.K.	ED33
		ZIMMERMAN, F.R.	ED33
		FRAGOMENI, J.M.	
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NOEVER, D.A.	SD48		
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		COAN, B.	Hampton University
		Weld Pool Stability in the Flat Position. For presentation at 81st Annual AWS Convention, Chicago, IL, April 26–28, 2000.	
NOEVER, D.A.	SD48		
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		TALIA, J.E.	Wichita State University
		The Relation Between Alloy Chemistry and Hot-Cracking. For presentation at 81st Annual AWS Convention, Chicago, IL, April 26–28, 2000.	
NOEVER, D.A.	SD48		
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		BERNSTEIN, E.	ED33
		MCCLURE, J.C.	ED33
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		JONES, S.D.	SD50
		RUSSELL, J.K.	SD50
		RAMSEY, B.D.	SD50
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- OBER, D. ES83  
THOMSEN, M.F. ES83  
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MCCOMAS, D.J. ES83  
Survey of Pancake-Shaped Warm Ion Distributions at Geosynchronous Orbit. For publication in Journal of Geophysical Research, 1999.
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WALKER, A.B.C., II Stanford University  
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BARBEE, T.W., JR. Lawrence Livermore  
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- PADIN, S. California Institute of Tech.  
CARTWRIGHT, J.K. California Institute of Tech.  
JOY, M. ES84  
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- PAGE, A.T. ED26  
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- PARKER, D. Hamilton Standard  
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- PARKS, G.K. University of Washington  
REME, H.  
LIN, R.P.  
SANDERSON, G.  
GERMANY, G. UAH/CSPAR  
SPANN, J.F., JR. ES83
- BRITTNACHER, M. University of Washington  
MCCARTHY, M.  
CHEN, L.J.  
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The Relationship of Ion Beams and Fast Flows in the Plasma Sheet Boundary Layer. For publication in Fourth International Conference on Substorms, Kluwer Academic Publishers, 1998.
- PEARSON, S.D. ED03  
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KONNERT, J.H.  
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PUSEY, M.L. ES76  
Energy Minimization of Molecular Features Observed on the (110) Face of Lysozyme Crystals. For presentation at American Crystallographic Association, Buffalo, NY, May 24, 1999.
- PERRY, J.L. ED62  
CARTER, R.N. Precision Combustion, Inc.  
ROYCHOUDHURY, S. Precision Combustion, Inc.  
Demonstration of an Ultra-Short Channel Metal Monolith Catalytic Reactor for Trace Contaminant Control Applications. For presentation at 29th International Conference on Environmental Systems, Denver, CO, July 1999.
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FALCONER, D.A.	UAH/ES82		
MOORE, R.L.	ES82		
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		HYDE, E.H.	TD15
		ESCHER, W.J.D.	SAIC
PREECE, R.D.	ES84	Development of a 12-Thrust Chamber Kerosene/Oxygen Primary Rocket Subsystem for an Early (1964) Air-Augmented Rocket Ground-Test System. For presentation at 16th International AIAA Conference, Norfolk, Virginia, November 1999.	
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PENDLETON, G.N.	UAH		
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BAND, D.L.	University of CA-San Diego		
The BATSE Gamma-Ray Burst Spectral Catalog—I. High Time Resolution Spectroscopy of Bright Bursts Using High Energy Resolution Data. For publication in <i>Astrophysical Journal Supplements</i> , Chicago, IL, 1999.		PUSEY, M.L.	ES76
		SMITH, L.	USRA
		FORSYTHE, E.	USRA
		Fluorescence Studies of Protein Crystallization Interactions. For presentation at American Crystallographic Association, Buffalo, NY, May 24, 1999.	
PRICE, M.W.	Corning Inc.		
SCRIPA, R.N.	UAB		
LEHOCZKY, S.L.	ES75	PUSEY, M.L.	ES76
SZOFRAN, F.R.	ES75	Fluorescence Studies of Protein Crystal Nucleation. For presentation at 18th IUCR General Assembly and Congress, Glasgow, Scotland, August 7, 1999.	
HANSON, B.	Corning Inc.		
Determination of the Solid/Liquid Interface Shape and Resultant Radial Homogeneity in Directionally Solidified Hg <sub>0.89</sub> Mn <sub>0.11</sub> Te. For presentation at ACCGE–11, Tucson, AZ, July 31–August 1, 1999.		QIU, H.-L.	California State
		LAM, N.S.	Louisiana State
		QUATTROCHI, D.A.	HR20
PRIMM, L.	JA62	GAMON, J.A.	California State
BERGMANN, A.	Boeing	Fractal Characterization of Hyperspectral Imagery. For publication in <i>Photogrammetric Engineering and Remote Sensing</i> , 1998/1999.	
EXPRESS Service to the <i>International Space Station</i> : EXPRESS Pallet. For presentation at STAIF '99 Conference on <i>ISS</i> Utilization, Albuquerque, NM, January 1999.		QUATTROCHI, D.A.	HR20
		Introduction to This Special Issue on Geostatistics and Scaling of Remote Sensing. For publication in <i>Photogrammetric Engineering and Remote Sensing</i> , 1998/1999.	
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Reusable Launch Vehicle (RLV) Mission/Market Model. For presentation at 2nd Joint Annual ISPA/SCEA International Conference, San Antonio, TX, June 8–11, 1999.		QUATTROCHI, D.A.	HR20
		LUVALL, J.C.	HR20
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PRUEGER, G.	Boeing	QUATTROCHI, D.A.	HR20
WILLIAMS, M.	Boeing	LUVALL, J.C.	HR20
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PARIS, J.	Boeing		
STEWART, E.	Boeing		
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QUATTROCHI, D.A. HR20  
JENSEN, J.R. University of South Carolina  
MORAIN, S.A. University of New Mexico  
WALSH, S.J. University of North Carolina  
RIDD, M.K. University of Utah  
Remote Sensing in Geography in the New Millennium: Prospects, Challenges, and Opportunities. For presentation at 1999 AAG Annual Meeting, Honolulu, HI, March 23, 1999.

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SU, C.-H. SD47  
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APPLE, J.A. ES84  
DIETZ, K.L. ES84  
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SHARMA, D.P. SD50  
MEISNER, J. SD50  
AUSTIN, R.A. SD50  
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AUSTIN, R.A. SD50  
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GOSTILO, V. Baltic Scientific  
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SOKOLOV, A. Baltic Scientific  
SIPILA, H. Metorex International Oy  
Preliminary Performance of CdZnTe Imaging Detector Prototypes. For presentation at International Workshop on Room Temperature Semiconductor X- & Gamma-Ray Detectors, Vienna, Austria, October 11–15, 1999.

REINISCH, B.W. University of MA  
HAINES, D.M. University of MA  
BIBL, K. University of MA  
CHENEY, G. University of MA  
GALKIN, I.A. University of MA  
HUANG, X. University of MA  
MYERS, S.H. University of MA  
SALES, G.S. University of MA  
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REINISCH, B.W. University of MA  
HOLT, J.M. TD64  
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SWARTZ, C.	Texas A&M University	A Fifth Force: Generalized Through Superconductors.	
FRIEDFED, R.	Austin State University	For publication in Physics Letters, 1999.	
ACKERMAN, E.	Broward Community		
CARRUTHERS, C.	Broward Community	ROBINSON, J.H.	ED52
DIGIROLAMO, A.	Broward Community	Orbital Debris Impact Damage to Reusable Launch	
ET AL.		Vehicles. For presentation at 1998 Hypervelocity	
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Payloads Project Office,” Annapolis, MD, September			
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		ROBINSON, M.B.	ES75
		LI, D.	UAH
		RATHZ, T.J.	UAH
		WILLIAMS, G.A.	UAH
RITTER, T.M.	University of North Carolina	Droplet Growth in Undercooled Cu-Co Alloys. For	
VOLZ, M.P.		presentation at 128th TMS Annual Meeting, San Diego,	
COBB, S.D.		CA, February 28–March 4, 1999.	
SZOFRAN, F.R.			
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		Research Center Symposium at NASA/MSFC,	
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ROBERTS, B.C.			
BATTS, W.	Computer Sciences		
Current Activities and Capabilities of the Terrestrial			
Environment Group at NASA’s Marshall Space Flight			
Center. For presentation at 8th Conference on Aviation,			
Range, & Aerospace Meteorology, Dallas, TX, January			
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FITZJARRALD, D.	HR20		
MCCAUL, E.W.	USRA		
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Precipitation Climatologies Over the Tropical Oceans.			
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Society Annual Meeting, Dallas, TX, January 10–15,			
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		a Hybrid Rocket Motor. For presentation at JANNAF	
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ROADS, J.	Scripps Institution of Oceanography	ROBINSON, M.B.	ES76
MCCAUL, E.W.	USRA	SAVAGE, L.	ES76
Consistency Between Tropical Divergent Circulations		SOELLNER, W.	
from Reanalysis Data Sets and Satellite-Derived		HUIE, D.	
Precipitation, Radiation, and Surface Fluxes. For		An Overview of the MSFC Electrostatic Levitation	
presentation at IUGG 1999 Symposia, Birmingham,		Facility. For presentation at 128th TMS Annual Meeting,	
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ROBERTSON, G.A.	PS01	ROMAN, M.C.	ED62
On the Mechanism for a Gravity Effect Using Type II		STEELE, J.W.	Hamilton Standard
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VONJOUANNE, R.G.	Boeing	For presentation at U.S. Air Force Academy, Colorado Springs, CO, October 19–22, 1998.
Assessment of the Microbial Control Measures for the Temperature and Humidity Control Subsystem Condensing Heat Exchanger of the <i>International Space Station</i> . For presentation at 29th International Conference on Environmental Systems, Denver, CO, July 1999.		SAYYAH, T. Sverdrup Corp.
		SWANSON, G.R. ED25
		SCHONBERG, W.P. UAH
		Application of Single Crystal Failure Criteria: Theory and Turbine Blade Case Study. For presentation at 38th AIAA Aerospace Sciences Meeting & Exhibit, Reno, NV, January 10–13, 2000.
ROTHERMEL, J.	HR20	
CUTTEN, D.R.	HR20	
HOWELL, B.F.	HR20	
HARDESTY, R.M.	HR20	SAYYAH, T. Sverdrup Technology
TRATT, D.M.	HR20	SWANSON, G.R. ED22
DARBY, L.S.	HR20	SCHONBERG, W.P. UAH
The Multi-Center Airborne Coherent Atmospheric Wind Sensor: Recent Measurements and Future Applications. For presentation at 10th Coherent Laser Radar Conference, Mount Hood, OR, June 28–July 2, 1999.		A Study of Single Crystal Fatigue Failure Criteria. For presentation at Space & Robotics 2000 Conference ASCE, Albuquerque, NM, February 28–March 2, 2000.
		SCHAEFER, D.A. SD44
ROWE, S.	ED53	COBB, S.D. SD44
WHITTEN, D.	ED53	SZOFRAN, F.R. SD44
CLOYD, R.	ED53	Development Approach for the Accommodation of Materials Science Research for the Materials Science Research Facility on the <i>International Space Station</i> . For presentation at Space Technology and Application International Forum (STAIF-00), Albuquerque, NM, January 30–February 3, 2000.
COPPENS, C.	ED53	
RODRIGUEZ, P.	ED53	
An Example of Concurrent Engineering. For presentation at AIAA Defense & Civil Space Programs Conference & Exhibit, Huntsville, AL, October 28–30, 1998.		
		SCHAEFER, D.A. SD44
RUF, J.	TD64	COBB, S.D. SD44
CANABAL, F.	TD64	SZOFRAN, F.R. SD44
HOLT, J.	TD64	Development of the Materials Science Research Facility (MSRF) and Experiment Apparatus for the <i>International Space Station (ISS)</i> . For presentation at TMS Minerals, Metals, Materials Society Meeting, Nashville, TN, March 12–16, 2000.
Ongoing Analysis of Rocket Based Combined Cycle Engines by the Applied Fluid Dynamics Analysis Group at Marshall Space Flight Center. For presentation at Tenth Thermal & Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.		
		SCHMIDT, G.R. EP61
RUSSELL, C.H. National Institute of Standards & Tech.		GERRISH, H.P. EP61
GUBAREV, M. NRC/SD50		MARTIN, J.J. EP61
KOLODZIEJCZAK, J. SD50		Antimatter Production for Near-Term Propulsion Applications. For publication in Journal of Propulsion and Power, 1999.
JOY, M. SD50		
MACDONALD, C.A. University of Albany		SCHMIDT, G.R. EP61
GIBSON, W.M. University of Albany		GERRISH, H.P. EP61
Polycapillary X-Ray Optics for X-Ray Astronomy. For publication in Advances in X-Ray Analysis, September 7, 1999.		MARTIN, J.J. EP61
		SMITH, G.A. Pennsylvania State University
RUSSELL, S.S. EH13		MEYER, K.J. Pennsylvania State University
WALKER, J.L. EH13		

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Antimatter Production for Near-Term Propulsion Applications. For presentation at 35th AIAA Conference, Los Angeles, CA, June 20–23, 1999.

SCHMIDT, G.R. TD40  
THIO, Y.F. TD40  
CHAKRABARTI, S. Pennsylvania State University  
The Performance Constraints of Gain-Limited Propulsion Systems. For presentation at 35th AIAA Conference, Los Angeles, CA, June 20–25, 1999.

SCHMIDT, G.R. TD40  
THIO, Y.C.F. TD40  
CHAKRABARTI, S. Pennsylvania State University  
The Performance Capabilities & Limitations of Gain-Limited Propulsion Systems. For presentation at 1999 NASA Advanced Propulsion Workshop, Huntsville, AL, April 5–8, 1999.

SCHMIDT, G.R. TD40  
GERRISH, H.P. TD40  
MARTIN, J.J. TD40  
SMITH, G.A. Pennsylvania State University  
MEYER, K.J. Pennsylvania State University  
Antimatter Requirements and Energy Costs for Near-Term Propulsion Applications. For publication in AIAA Journal of Propulsion and Power, 1999/2000.

SCHUNK, R.G. ED26  
CHUNG, T.J. UAH  
Parallelization of the Flow Field Dependent Variation Scheme for Solving the Triple Shock/Boundary Layer Interaction Problem. For presentation at Tenth Thermal & Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.

SEN, S. USRA/SD47  
KAUKLER, W. UAH  
CATALINA, A. USRA/SD47  
STEFANESCU, D.M. University of Alabama  
CURRERI, P. ES75  
Interaction of Porosity with an Advancing Solid/Liquid Interface: A Real-Time Investigation. For presentation at 4th Pacific Rim International Conference on Modeling of Casting & Solid Processes, Seoul, Korea, September 5, 1999.

SEN, S. USRA/ES75  
JURETZKO, F. University of Alabama  
STEFANESCU, D.M. University of Alabama  
DHINDAW, B.K. IIT Khargpur, India  
CURRERI, P.A. ES75

In-Situ Observations of Interaction Between Particulate Agglomerates and an Advancing Planar Solid/Liquid Interface: Microgravity Experiments. For publication in Journal of Crystal Growth, The Netherlands, 1999.

SEVER, T.L. HR20  
Environmental and Archaeological Research in the Peten, Guatemala. For presentation at Society of American Archaeology, Chicago, IL, March 26, 1999.

SHARP, J.R. ED26  
Shuttle and Transfer Orbit Thermal Analysis and Testing of the Chandra X-Ray Observatory Charged-Coupled Device Imaging Spectrometer Radiator Shades. For presentation at Tenth Thermal & Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.

SHAW, E.J. VS20  
Economic Analysis on the Space Transportation Architecture Study (STAS) NASA Team. For presentation at AIAA Space Technology Conference and Exposition, Albuquerque, NM, September 28–30, 1999.

SHIPLEY, A. University of Colorado  
CASH, W. University of Colorado  
OSTERMAN, S. University of Colorado  
JOY, M.K. SD50  
CARTER, J. SD50  
Development of a Grazing Incidence X-Ray Interferometer. For publication in Proceedings of SPIE Conference, August 1999.

SIEBENHAAR, A. Aerojet  
BULMAN, M. Aerojet  
JOHNSON, R. Aerojet  
FAZAH, M. TD51  
Demonstrating the Performance Benefits of the Strutjet RBCC for Space Launch Architectures. For presentation at ISABE Conference, Florence, Italy, September 1999.

SINGER, C. MP21  
Space Shuttle Main Engine: Advanced Health Management. For presentation at USA Shuttle Development Conference, Moffett Federal Airfield, CA, July 28–30, 1999.

SINGH, A.D. Auburn University  
LAKIN, D.R., II EB32  
SINHA, G. Auburn University  
NIGH, P. IBM

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Binning for IC Quality: Experimental Studies on the SEMATECH Data. For presentation at IEEE International Symposium on Defect and Fault VLSI Systems, Austin, TX, November 2–4, 1998.	ENGELLEN, R. GARAND, L. JACKSON, D. JEDLOVEC, G. ET AL.	Colorado State AES NOAA/CDC SD60
SKELLEY, S. TD63 ZOLADZ, T. TD63 Water Flow Performance of a Superscale Model of the Fastrac Liquid Oxygen Pump. For presentation at 1999 Thermal and Fluids Workshop, Huntsville, AL, September 13–17, 1999.	SOLAKIEWICZ, R.J. KOSHAK, W.J.	HR20 HR20
SLADE, K.N. Duke University TINKER, M.L. ED23 Analytical and Experimental Investigation of the Dynamics of Polyimide Inflatable Cylinders. For presentation at AIAA 40th Structures, Structural Dynamics & Materials Conference, St. Louis, MO, April 12–15, 1999.	Time of Arrival Retrievals on an Oblate Spheroidal. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 6–11, 1999.	
SLEDD, A.M. FD31 The <i>ISS EXPRESS</i> Rack: An Innovative Approach for Rapid Integration. For presentation at Space Technology & Applications International Forum (STAIF), Albuquerque, NM, January 30–February 3, 2000.	SPANN, J.F., JR. VENTURINI, C.C. COMFORT, R.H. ABBAS, M.M.	ES83 UAH University of Alabama ES83
SMITH, D.D. ES76 YOON, Y. University of Rochester BOYD, R.W. University of Rochester CROOKS, R.M. Texas A&M University GEORGE, M. UAH Transmission Measurement of the Third-Order Susceptibility of Gold. For presentation at SPIE Conference, Denver, CO, July 18–21, 1999.	Experimental Study of Dust Grain Charging. For presentation at 2nd International Conference on the Physics of Dusty Plasmas, Hokone, Kanagawa, Japan, May 24, 1999.	
SMITH, D.D. ES76 YOON, Y. University of Rochester BOYD, R.W. University of Rochester CAMPBELL, J.K. BAKER, L.A. CROOKS, R.M. Texas A&M University GEORGE, M. UAH Z-Scan Measurements of the Nonlinear Absorption of a Thin Gold Film. For publication in Journal of Applied Physics, 1999.	SPANN, J.F., JR. SD50 SMITH, M. SD50 GERMANY, G.A. UAH/CSPAR CHUA, D. University of Washington BRITTNACHER, M.J. University of Washington PARKS, G.K. University of Washington On the Relationship of Interplanetary Pressure Pulses and Subsequent Auroral Activity. For presentation at Fall AGU Meeting, San Francisco, CA, December 12–17, 1999.	
SODEN, B. NOAA/GFDL TJEMKES, S. EUMETSAT SAUNDERS, R. ECMWF BATES, J. NOAA/CDC ELLINGSON, B. University of Maryland	Evidence for Directly Driven Auroral Signatures Resulting from Interplanetary Pressure Pulses. For presentation at 1999 Spring AGU Meeting, Boston, MA, May 30–June 4, 1999. For publication in Proceedings of 1999 Spring AGU Meeting, Boston, MA, May 30–June 4, 1999.	
	SPANN, J.F., JR. SD50 PARKS, G.K. University of Washington BRITTNACHER, M.J. University of Washington	

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GERMANY, G.A.	UAH/CSPAR	SPRINGER, A.M.	TD14
MENDE, S.	University of California	Expanding Capabilities: Trisonic to Hypersonic. For presentation at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Los Angeles, CA, June 20–24, 1999.	
FREY, H.	University of California		
CHENETTE, D.	Lockheed Martin		
SCHULTZ, M.	Lockheed Martin		
PETRINEC, S.	Lockheed Martin		
Using Remote Sensing as a Plasma Diagnostic: A Discussion of Techniques Being Used to Probe the Ionosphere in Order to Determine the Energy and Spectral Characteristics of Precipitating Electrons and Protons. For presentation at 5th IPELS Conference, Kreuth, Germany, August 9–13, 1999.		SPRINGER, A.M.	TD14
		X–34 Program. For presentation at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Los Angeles, CA, June 20–24, 1999.	
SPENCER, R.W.	HR20	STANLEY, T.T.	International Space
BRASWELL, W.D.	Nichols Research Corp.	ALEXANDER, R.	PD21
Localized Upper Tropospheric Warming During Tropical Depression and Storm Formation Revealed by the NOAA–15 AMSU. For presentation at American Meteorological Society, Dallas, TX, January 10–15, 1999.		A Collaborative Analysis Tool for Integrating Hypersonic Aerodynamics, Thermal Protection Systems, and RBCC Engine Performance on Single Stage to Orbit Launch Vehicles. For presentation at AIAA Space Planes & Hypersonic Systems and Technologies Conference, Norfolk, VA, November 4–9, 1999.	
SPENCER, R.W.	HR20	STEADMAN, T.	Sverdrup Technology
BRASWELL, W.D.	Nichols Research Corp.	MAJUMDAR, A.	Sverdrup Technology
CHRISTY, J.R.	UAH	HOLT, K.	TD53
A New Era in Global Temperature Monitoring with the Advanced Microwave Sounding Unit (AMSU). For presentation at American Meteorological Society, Dallas, TX, January 10–15, 1999.		PTA1 Helium Pressurization System Model. For presentation at Tenth Thermal and Fluids Analysis Workshop, Huntsville, AL, September 13–17, 1999.	
SPENCER, R.W.	HR20	STEVENSON, B.A.	UAH
BRASWELL, W.D.	Nichols Research Corp.	HORWITZ, J.L.	UAH
New NOAA–15 Advanced Microwave Sounding Unit (AMSU) Datasets for Stratospheric Research. For presentation at AGU Meeting, Boston, MA, May 31–June 4, 1999.		GERMANY, G.A.	UAH/CSPAR
SPENCER, R.W.	HR20	CRAVEN, P.D.	ES83
BRASWELL, W.D.	Nichols Research Corp.	CHANDLER, M.O.	ES83
New NOAA–15 Advanced Microwave Sounding Unit (AMSU) Datasets for Stratospheric Research. For presentation at AGU Meeting, Boston, MA, May 31–June 4, 1999.		MOORE, T.E.	GSFC
SPENCER, R.W.	HR20	GILES, B.L.	GSFC
PETRENKO, B.	USRA	PARKS, G.K.	University of Washington
Temperature Crosstalk Sensitivity of the Kummerow Rainfall Algorithm. For presentation at 6th Specialist Meeting on Microwave Radiometry, Florence, Italy, March 16–18, 1999.		POLLOCK, C.J.	Southwest Research Institute
SPRINGER, A.M.	ED34	POLAR/TIDE Observations of Field Aligned 0+ Flows at 5000 km Altitude Over the Auroral Regions in Comparison to UVI Auroral Images. For presentation at AGU Meeting, Boston, MA, June 2, 1999.	
WALKER, H.J.	ED34	STEVENSON, B.A.	UAH
FROST, A.	ED34	HORWITZ, J.L.	UAH
Uncertainty Analysis of the NASA MSFC 14-Inch Trisonic Wind Tunnel. For presentation at 37th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 11–14, 1999.		CREEL, B.	UAH
		ELLIOTT, H.A.	UAH
		COMFORT, R.H.	University of Alabama
		SU, Y.J.	
		MOORE, T.E.	GSFC
		CRAVEN, P.D.	SD50

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Relationship of 0+ Field-Aligned Flows and Densities to Convection Speed in the Polar Cap at 5000 km Altitude. For publication in Journal of Atmospheric Sciences and Terrestrial Physics, 1999.		SU, C.-H.	SD47
		FETH, S.	UAH
		LEHOCZKY, S.L.	SD47
		In-Situ Partial Pressure Measurements and Visual Observation During Crystal Growth of ZnSe by Seeded Physical Vapor Transport. For publication in Journal of Crystal Growth, 1999.	
STRAKEY, P.A.	Air Force Research Lab.	SU, C.-H.	SD47
TALLEY, D.G.	Air Force Research Lab.	FETH, S.	SD47/UAH
HUTT, J.J.	TD61	WANG, L.J.	University of Tennessee
Mixing Characteristics of Coaxial Injectors at High Gas to Liquid Momentum Ratios. For publication in Journal of Propulsion and Power, 1999.		LEHOCZKY, S.L.	SD47
SU, C.-H.	ES75	Photoluminescence Studies of ZnSe Starting Materials and Vapor Grown Bulk Crystals. For publication in Journal of Applied Physics, 1999/2000.	
FETH, S.	Raytheon STX Corp.	SUESS, S.T.	ES82
HIRSCHFELD, D.	New Mex. Inst. of Mining and Tech.	GARY, G.A.	ES82
SMITH, T.M.	New Mex. Inst. of Mining and Tech.	NERNEY, S.F.	Ohio University
WANG, L.J.	University of Tennessee	Beta in Streamers. For publication in Proceedings of the Solar Wind 9 Conference, Nantucket, MA, January 1999.	
VOLZ, M.P.	ES75	SUESS, S.T.	ES82
LEHOCZKY, S.L.	ES75	WANG, A.-H.	UAH
Point Defect Distributions in ZnSe Crystals: Effects of Gravity Vector Orientation During Physical Vapor Transport Growth. For publication in Journal of Crystal Growth, 1998/1999.		WU, S.T.	UAH
SU, C.-H.	ES75	NERNEY, S.F.	Ohio University
GEORGE, M.A.	UAH	Steamer Evaporation. For publication in Proceedings of the SOHO 7 Workshop, Northeast Harbor, ME, September 1998.	
PALOSZ, W.	USRA	SUESS, S.T.	ES82
FETH, S.	Raytheon STX Corp.	POLETTI, G.	Osservatorio Astrofisico di Arcetri
LEHOCZKY, S.L.	ES75	CORTI, G.	Osservatorio Astrofisico di Arcetri
Contactless Growth of ZnSe Single Crystals by Physical Vapor Transport. For publication in Journal of Crystal Growth, 1998/1999.		SIMNETT, G.	University of Birmingham
SU, C.-H.	ES75	NOCI, G.	Universita di Firenze
FETH, S.	Raytheon STX Corp.	ROMOLI, M.	Universita di Firenze
VOLZ, M.P.	ES75	KOHL, J.	Harvard-Smithsonian
MATYI, R.	University of Wisconsin-Madison	GOLDSTEIN, B.	JPL
GEORGE, M.A.	UAH	Ulysses-UVCS Coordinated Observations. For publication in Proceedings of SOHO 7 Workshop, Northeast Harbor, ME, September 1998.	
BURGER, A.	Fisk University	SUESS, S.T.	ES82
LEHOCZKY, S.L.	ES75	NERNEY, S.	Ohio University
Vapor Growth and Characterization of Cr-doped ZnSe Crystals. For publication in Journal of Crystal Growth, 1998/1999.		MHD Streamer Structure, Slow Solar Wind, and the Streamer Brightness Boundary. For presentation at European Solar Physics Meeting, Florence, Italy, September 1999.	
SU, C.-H.	SD47		
SHA, Y.-G.	USRA		
VOLZ, M.P.	SD47		
CARPENTER, P.	USRA		
LEHOCZKY, S.L.	SD47		
Vapor Growth and Characterization of ZnSeTe Solid Solutions. For publication in Journal of Crystal Growth, 1999.			



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SUESS, S.T.	SD50	WATSON, M.	SD72
NERNEY, S.	Ohio University	BUNTON, P.	SD72
Streamers Brightness Boundary. For publication in ESA SP Series European Space Agency, Noordwijk, The Netherlands, September 11, 1999.		PEARSON, S.D.	SD72
		BILBRO, J.	SD72
		Overview of Photonic Materials for Application in Space Environments. For presentation at the EOS/SPIE Symposium on Remote Sensing, Florence, Italy, September 1999.	
SUGGS, R.J.	SD60		
JEDLOVEC, G.J.	SD60		
LAPENTA, W.M.	SD60		
HAINES, S.L.	UAH	THIO, Y.C.F.	TD40
Evaluation of Skin Temperatures Retrieved from GOES-8. For presentation at 10th Conference of Satellite Meteorology and Oceanography, Long Beach, CA, January 10-14, 2000.		FREEZE, B.	TD40
		KIRKPATRICK, R.C.	Los Alamos National Lab.
		LANDRUM, B.	UAH
		GERRISH, H.P., JR.	TD40
		SCHMIDT, G.R.	TD40
SUITS, M.W.	EH13	High-Energy Space Propulsion Based on Magnetized Target Fusion. For presentation at 35th AIAA/ASME/ SAE/ASEE Joint Propulsion Conference & Exhibit, Los Angeles, CA, June 20-24, 1999.	
CLARK, L.	EH13		
COX, D.		THOMAS, R.J.	New Mex. Inst. of Mining and Tech.
EH13		KREHBIEL, P.R.	New Mex. Inst. of Mining and Tech.
Nondestructive Evaluation of the Friction Weld Process on 2195/2219 Grade Aluminum. For presentation at American Society of Nondestructive Testing (ASNT) Spring Conference, Orlando, FL, March 23-25, 1999.		RISON, W.	New Mex. Inst. of Mining and Tech.
		HAMLIN, T.	New Mex. Inst. of Mining and Tech.
SWANSON, G.R.	ED25	BOCCIPPIO, D.	SD60
ZACHARY, L.W.	Iowa State University	GOODMAN, S.	SD60
Experimentally Determined Crack Location and Mixed Mode Stress Intensity Factors. For presentation at 1999 SEM Annual Conference & Exposition, Cincinnati, Ohio, June 7-9, 1999.		CHRISTIAN, H.	SD60
		Comparison of Ground-Based 3-Dimensional Lightning Mapping Observations with Satellite-Based LIS Observations in Oklahoma. For presentation at 11th International Conference on Atmospheric Electricity, Guntersville, AL, June 7-11, 1999.	
SZOFRAN, F.R.	ES75		
Reducing and Inducing Convection in Ge-Si Melts with a Static Magnetic Field. For presentation at Gordon Research Conference, Henniker, New Hampshire, June 27-July 2, 1999.		THOMAS, R.J.	New Mex. Inst. of Mining and Tech.
		KREHBIEL, P.R.	New Mex. Inst. of Mining and Tech.
		RISON, W.	New Mex. Inst. of Mining and Tech.
		HAMLIN, T.	New Mex. Inst. of Mining and Tech.
TANTON, G.	Morgan Research Corp.	BOCCIPPIO, D.	SD60
KESMODEL, R.	Morgan Research Corp.	GOODMAN, S.	SD60
BURDEN, J.	Morgan Research Corp.	CHRISTIAN, H.	SD60
SU, C.-H.	SD47	Comparison of Ground-Based 3-Dimensional Lightning Mapping Observations with Satellite-Based LIS Observations in Oklahoma. For publication in Geophysical Research Letters, 1999.	
COBB, S.D.	SD47		
LEHOCZKY, S.L.	SD47	TIMOFEeva, T.V.	
Characterization of Electronic Materials HgZnSe and HgZnTe Using Innovative and Conventional Techniques. For presentation at AIAA Annual Meeting, Reno, NV, January 10-12, 2000.		NESTEROV, V.N.	
		ANTIPIN, M.Y.	
TAYLOR, E.W.	University of New Mexico	CLARK, R.D.	SD47
OSINSKI, M.	University of New Mexico	SANGHADASA, M.	
SVIMONISHVILI, T.	University of New Mexico	CARDELINO, B.H.	Spelman College

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MOORE, C.E.	SD47	Analysis Workshop, Huntsville, AL, September 13–17, 1999.
FRAZIER, D.O.	SD47	
Molecular Modeling and Experimental Investigations of Nonlinear Optical Compounds—Monosubstituted Derivatives of Dicyanovinylbenzene. For publication in Journal of Molecular Structure (THEOCHEM), 1999.		
TOWNSEND, J.S.	ED23	
SMART, C.	Hernandez Eng., Inc.	
Reliability/Risk Methods and Design Tools for Application in Space Programs. For presentation at AIAA Defense & Civil Space Programs Conference & Exhibit, Huntsville, AL, October 28–30, 1998. For publication in Proceedings of AIAA Defense & Civil Space Programs Conference & Exhibit, Huntsville, AL, October 28–30, 1998.		
TOWNSEND, J.S.	ED23	
PECK, J.	ED23	
AYALA, S.	ED23	
Probabilistic Structural Analysis of the SRB Aft Skirt External Fitting Modification. For presentation at AIAA 40th Structures, Structural Dynamics & Materials Conference, St. Louis, MO, April 12–15, 1999.		
TRINH, H.P.	EP62	
CRAMER, J.M.	EP62	
Status of Liquid Oxygen/Liquid Methane Injector Study for a Mars Ascent Engine. For presentation at 10th Annual Penn State PERC Symposium, Huntsville, AL, October 26–27, 1998.		
TRINH, H.P.	EP62	
CRAMER, J.M.	EP62	
Light-Weight Injector Technology for Cryogenic Mars Ascent Engines. For presentation at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Los Angeles, CA, June 20–24, 1999.		
TUCKER, D.S.	SD70	
WORKMAN, G.	UAH	
SMITH, G.	UAH	
The Effects of Gravity on ZBLAN Glasses. For presentation at International Symposium on Non-Oxide Glasses, Florianopolis, Brazil, April 10–11, 2000.		
TUCKER, P.K.	TD64	
SHYY, W.	University of Florida	
VAIDYANATHAN, R.	University of Florida	
Optimization of a GO <sub>2</sub> /GH <sub>2</sub> Impinging Injector Element. For presentation at Tenth Thermal & Fluids		
VAN HOOSER, K.	EP74	
BAILEY, J.	Sverdrup	
MAJUMDAR, A.	Sverdrup	
Numerical Prediction of Transient Axial Thrust and Internal Flows in a Rocket Engine Turbopump. For presentation at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Los Angeles, CA, June 21, 1999.		
VAUGHAN, W.	UAH	
JOHNSON, D.L.	ED44	
EHERNBERGER, L.J.	Dryden/NASA	
An Overview of Atmospheric Modeling for Aeronautical and Aerospace Vehicle Simulation Applications. For presentation at AIAA Modeling and Simulation Technologies Conference, Portland, OR, August 9–11, 1999.		
VAUGHN, J.A.	ED31	
KAMENETZKY, R.R.	ED31	
FINCKENOR, M.	ED31	
WRIGHT, K.	UAH	
Development of Polymer Coatings for the ProSEDS Tether. For presentation at AIAA Aerospace Sciences Conference, Reno, NV, January 10–13, 2000.		
VAUGHN, T.P.	EH43	
Composites for Cryotank Structures: Present and Future—MSFC Perspective. For presentation at Aeromat '99, 10th Annual Advanced Aerospace Materials & Processes Conference, Dayton, OH, June 21–24, 1999.		
VAUGHN, T.P.	EH43	
Metals for Cryotank Structures: Present and Future—MSFC Perspective. For presentation at Aeromat '99, 10th Annual Advanced Aerospace Materials & Processes Conference, Dayton, OH, June 21–24, 1999.		
VENTURINI, C.C.	UAH/SD50	
SPANN, J.F., JR.	SD50	
COMFORT, R.H.	UAH/SD50	
Preliminary Results from a Laboratory Study of Charging Mechanisms in a Dusty Plasma. For presentation at Colloquium/Physics Department of Auburn University, Auburn, AL, April 8, 1999.		

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VENTURINI, C.C.	UAH/SD50	WANG, J.-C.	Alabama A&M University
SPANN, J.F., JR.	SD50	WATRING, D.	ES71
COMFORT, R.H.	UAH/SD50	LEHOCZKY, S.L.	ES71
A Laboratory Study of the Charging/Discharging Mechanisms of a Dust Particle Exposed to an Electron Beam. For presentation at IPELS '99, Kreuth, Germany, August 11, 1999.		SU, C.-H.	ES71
		GILLIES, D.C.	ES71
		SZOFRAN, F.R.	ES71
		Effect of a Nonplanar Melt-Solid Interface on Lateral Compositional Distribution During Unidirectional Solidification of a Binary Alloy with a Constant Growth Velocity V—Part 1, Theory. For presentation at SPIE's International Symposium on Optical Science, Denver, CO, July 19, 1999.	
VENTURINI, C.C.	UAH/SD50	WANG, J.-C.	Alabama A&M University
SPANN, J.F., JR.	SD50	WATRING, D.	ES71
COMFORT, R.H.	UAH/SD50	LEHOCZKY, S.L.	ES71
A Laboratory Study of the Charging/Discharging Mechanisms of a Dust Particle Exposed to an Electron Beam. For presentation at American Physical Society Division of Plasma Science Meeting, Seattle, WA, November 16, 1999.		SU, C.-H.	ES71
		GILLIES, D.C.	ES71
		SZOFRAN, F.R.	ES71
		SHA, Y.-G.	ES71
		Effect of a Nonplanar Melt-Solid Interface on Lateral Compositional Distribution During Unidirectional Solidification of a Binary Alloy with a Constant Growth Velocity V—Part 1, Theory. For publication in Proceedings of SPIE, Volume 3792, 1999.	
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WITHEROW, W.K.	ES76	SU, C.-H.	ES75
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